PULP & PAPER

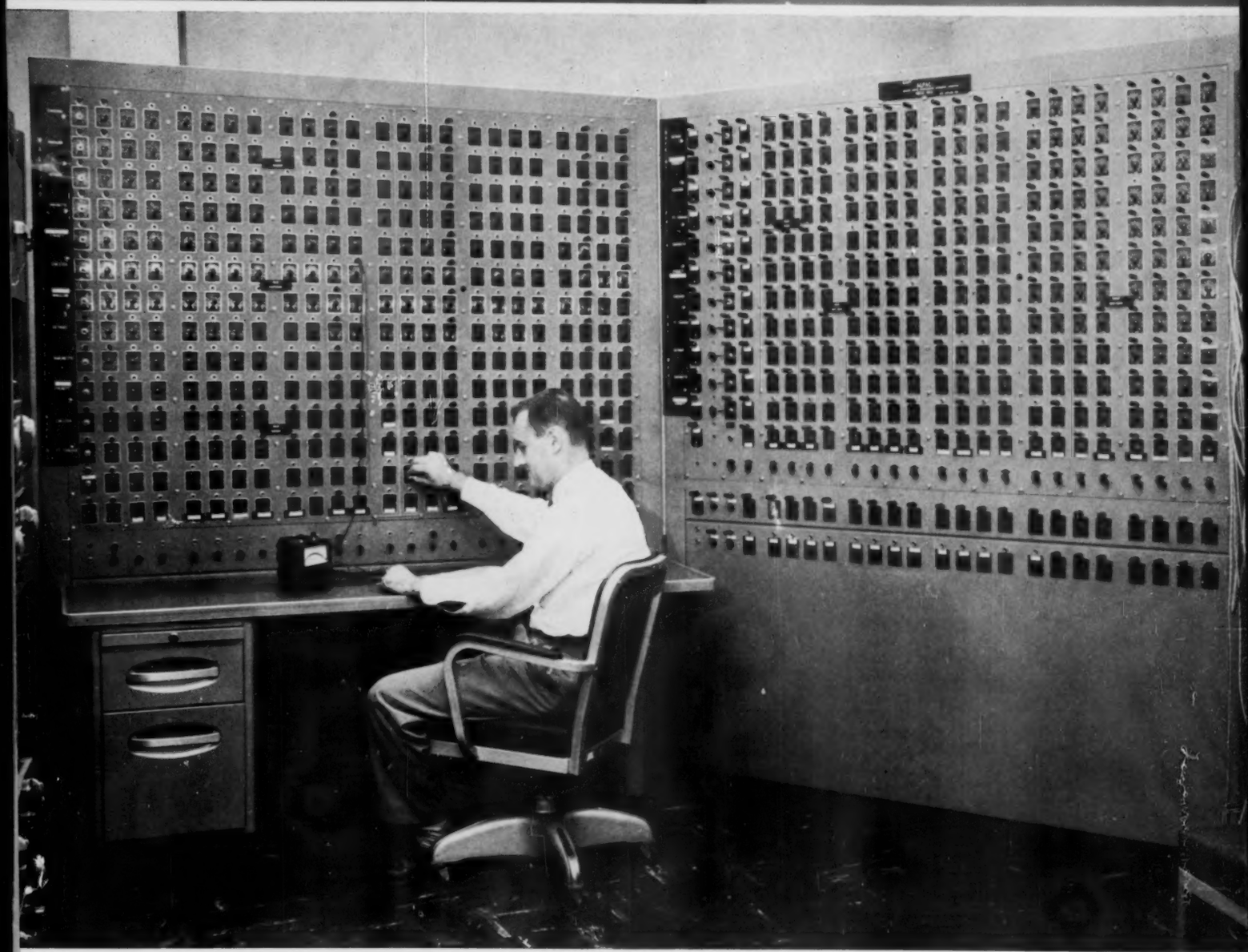
DECEMBER 1959

SPECIAL – 9 Chairmen Evaluate Papers Given at Engineering Conference

page 67

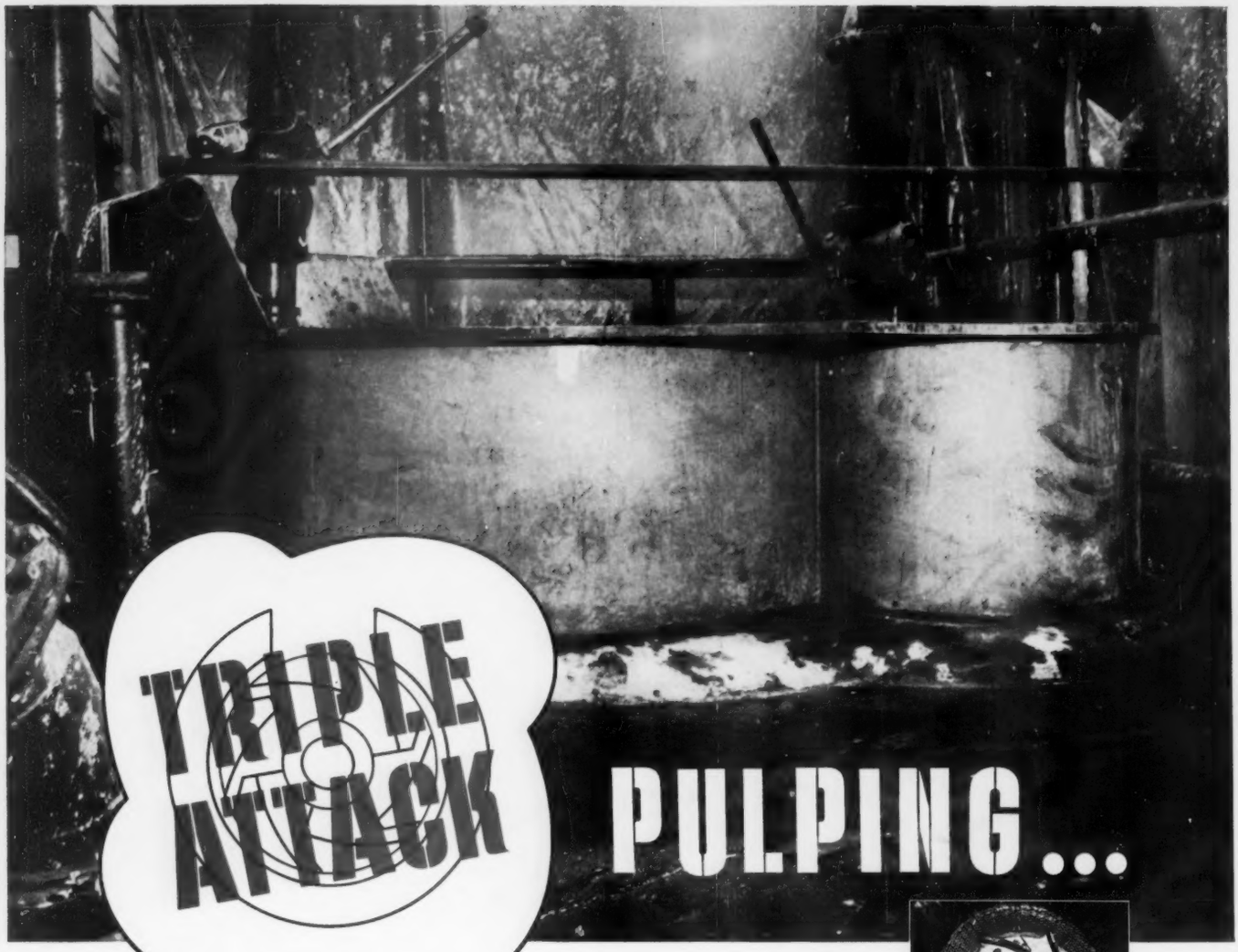
New Mill in Far West

page 84



AL-PAC—SENSATION AT TAPPI CONFERENCE . . .

Biggest news of systems engineering session at Pittsburgh was unveiling of this new type computer developed by Scott Paper Co. Story on page 67



TRIPLE ATTACK PULPING...

what makes this new method so successful?

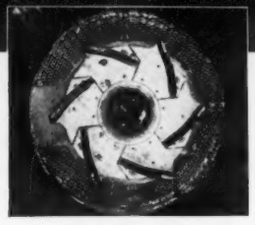
Triple Attack pulping is an advanced method, exclusive in the new Emerson Pulper, that *multiplies the number of defibering cycles which take place within a given period.* Thus, it guarantees maximum defibering on all types of stock — in 20 to 30 minutes — wet strength slightly longer. It also offers complete pulping at 8 to 12% consistency, uniform mixing, fast charging and dumping, and extremely low power consumption at full or partial capacity.

The success of the Emerson Triple Attack Pulper lies in its advanced lobe shape, tapering tub walls, conical bottom and effective impellor action.

Pulp fibers are subjected to a relentless triple attack by (1) the violent agitation of the impellor, by (2) the force and friction of fiber contact with the specially designed tub walls, and by (3) the vigorous hydraulic defibering action caused when on-coming stock streams from the impellor hit the flow of stock returned by the tub walls.

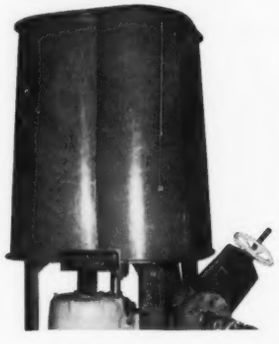
Because of this exclusive tapered and lobed wall construction, all "dead spots" are eliminated. Triple Attack pulping provides complete defibering by the fastest, most economical method yet devised.

For further information, please write to The Emerson Manufacturing Co., Division of John W. Bolton & Sons, Inc., Lawrence, Massachusetts.



The rotor and extraction plate

View of vortex and stock flow at 8-9% consistency



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A product of BOLTON EMERSON

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Typical of Rice Barton papermaking machines is that built-in extra quality — that gives you all you bargained for, and more — much more.
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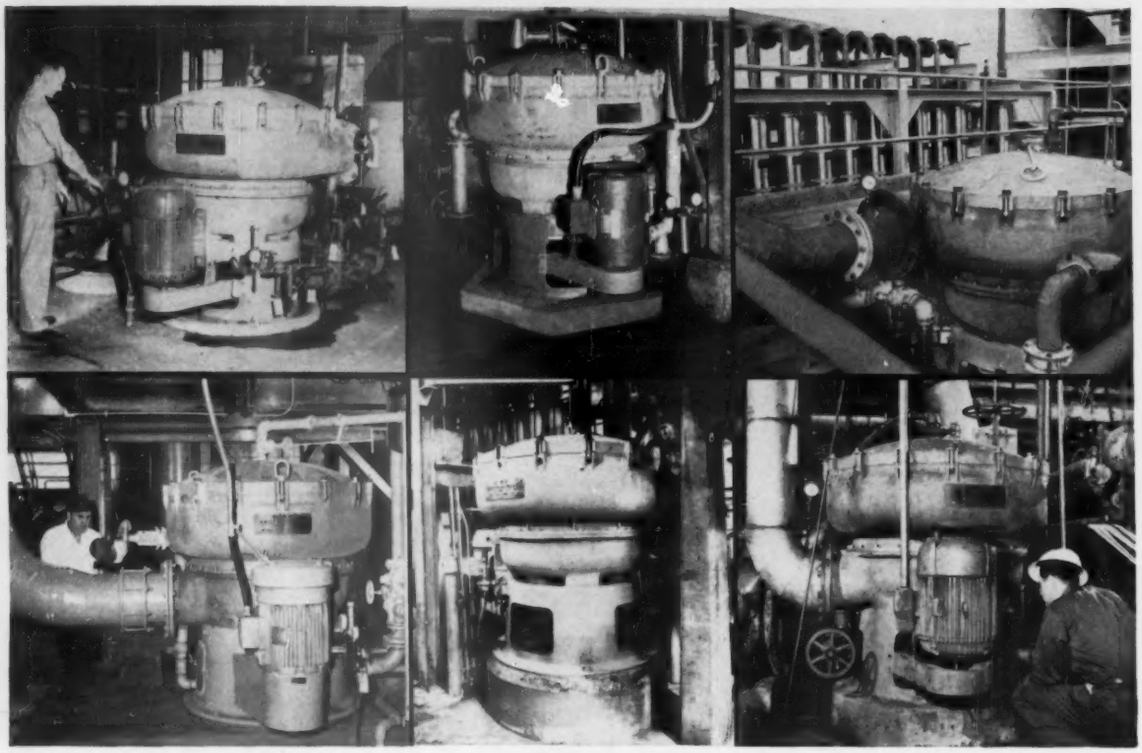
Paper Machinery Builders Since 1837
RICE BARTON

Why Don't YOU Centriscreen YOUR STOCK?



Putting On A BIRD CENTRISCREEN Is Just About As Easy As Putting On A New Valve

As these recent installations indicate, you can locate the Centriscreen almost anywhere you have a vacant five foot circle — in the basement, on the machine room floor, on a mezzanine.

It *works* — right from the start. It runs and keeps on running, without screen plate breaks, erosion or operating troubles of any kind.

It smooths production and saves money by:

- **reducing breaks on the machine**
- **cutting down on down time**
- **increasing wire life**
- **improving sheet formation**
- **eliminating lumps and slime**
- **permitting faster machine speeds**
- **maintaining uniform results on difficult grades**
- **producing a sheet that meets today's critical quality standards**
- **doing all this at lower screening cost per ton**

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BIRD MACHINE'S 50th YEAR OF SERVICE TO INDUSTRY

PULP & PAPER

Reader's Guided Tour

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Battle for New Markets: 1959 a Year of Records

Biggest Engineering Meeting Ever! What Happened That Was Important?

PULP & PAPER offers in this issue a unique report on the events in Pittsburgh.

Nine chairmen of important sessions in the biggest TAPPI meeting ever held outside of New York have written their own REVIEWS and VIEWS of the significant developments.

Ed Thode

These nine men are recognized authorities in their fields—that's why they were the chairmen. They interpret and evaluate the significance of the papers given in their sessions. Here's where to find their reports:

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Ed Hopper

OTHER "SPECIALS" IN THIS ISSUE:

World's Future Paper Needs 82

On-the-spot report from Rome by our special correspondent giving highlights of the Consultation on Pulp and Paper Demand, Supply and Trade, which predicted world demand will double by 1975.

Complete Story of New Mill in West 84

Maximum wood use was the objective when Cascade Kraft Corp. built the first pulp and paperboard mill in southeastern Washington state. The chip handling system is ultra-modern. High quality water is provided. Sandy mill site was "Vibrofloted" (picture) for safe mill construction.

CIRCULATION DEPT., 500 Howard St., San Francisco 5, Calif. C. C. Baake, Circ. Mgr. Send subscription orders and changes of address to PULP & PAPER, above address. Include both old and new addresses.

RATES (including World Review Number): U.S., Canada and Latin America—1 yr., $5; 2 yrs., $8; 3 yrs., $10. Other countries—1 yr., $7. Sterling area orders may be sent to: Harold P. deLooze Ltd., 7 St. James Square, Manchester 2, England.

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—the drive our customers asked for

Our customers helped us design this new unit. We sent our men into the field to find out what our customers needed in a screw conveyor drive—then our engineers designed a new drive that offers the maximum of service, versatility, operating economy and long life. Here are some of its outstanding features:

A COMPLETE DRIVE: Saves engineering and assembly time. Six sizes to cover entire range—each with these ratios: — 4:1, 9:1, 14:1 and 24:1. Bolts to any standard trough end—eliminates trough end bearing. Eliminates drive shaft wobble. Efficient FALK single helical gears.

SEAL HOUSINGS: Choice of seals (neoprene or leather lip, felt or waste) to accommodate material conveyed. Space between trough seal and unit seal prevents conveyed material from reaching unit seal.

REMOVABLE DRIVE SHAFT: Snap ring assembly permits easy removal. Five sizes, from 1½″ to 3⅞″.

TROUGH END: Can be fastened to any standard trough. Eight sizes, from 6″ to 20″.

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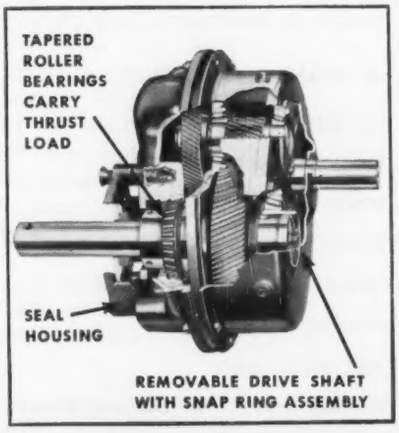
AN IMPORTANT ECONOMY: Buy only what you need—the basic reducer alone, or with trough end and/or motor mount. For detailed information, contact your Falk Representative or Distributor—or ***write direct for Bulletin 7106.***



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MILLER FREEMAN PUBLICATIONS

The Editor Reads His Mail

Address letters to The Editor, PULP & PAPER, 1791 Howard St., Chicago 26, Ill.

Where Is World's Biggest Man-Made Forest? Kaingaroa's 252,000 Acres?

—Auckland, New Zealand

Editor: We were interested to read in your PULP & PAPER INTERNATIONAL issue of September 1959 (page 29) that the Usutu Forests in South Africa contained 98,000 acres of planted forests and which South Africans considered the largest man-made forests in the world.

It would be interesting to settle definitively the question of which are the largest man-made forests in the world. Here in New Zealand we have Kaingaroa State Forest which has a net planted area of 252,000 acres and a gross land area of 328,000 acres.

The wood supplies for Tasman Pulp and Paper Company's newsprint, woodpulp and lumber mill are drawn from the Murupara Working Circle of Kaingaroa Forest, which has a net planted area of 201,000 acres and a gross land area of 275,000 acres. This forest is situated in the Rotorua/Taupo region of the central North Island.

In the same region there is a forest owned by N. Z. Forest Products Ltd. which has a net planted area of 176,000 acres. The total area of planted forest in the Rotorua/Taupo region is of the order of 500,000 acres.

Kaingaroa Forest is often said to be the largest man-made forest in the world, but it would be interesting to know whether this claim could be sustained.

J. WITTEN-HANNAH
Tasman Pulp and Paper Co. Ltd.

Editor's note: It appears as though New Zealand is the winner, but we invite our readers to comment.

Mill Use of PVC Pipe

—Port Arthur, Ontario

Editor: Please refer to the article on PVC pipe as shown on page 90, your October issue. Is the pipe really in manufacture in either the U.S. or in Canada? I would appreciate the name and address of the manufacturer of this pipe.

M. W. TURNER

Editor's Note: Interest in polyvinyl chloride piping in pulp and paper mills is tremendous, as indicated at a recent industry meeting where a speaker on the subject answered questions for almost an hour. The following companies are included among manufacturers of PVC pipe: Tube Turn Plastics, Inc., Louisville, Ky.; National Tube Div. of U.S. Steel, Pittsburgh, Pa., (pipe but no fittings); B. F. Goodrich Co., Industrial Products Div., Akron, O.; Carlon Products Corp., Aurora, O.; Kraloy Plastics Fipe Co., Los Angeles; Industrial Plastic Fabricators, Inc., Norwood, Mass.; Luzerne Rubber Co., Trenton, N.J.; Crane Company, Chicago, Ill.; Colonial Plastics Mfg. Co., Cleveland, O.; American Hard Rubber Co., New York 13, N.Y.; Joseph T. Ryerson & Son Inc., Chicago, Ill. and A. M. Byers Co., Clark Bldg., Pittsburgh, Pa. This, of course, is undoubtedly incomplete.

Merci Beaucoup for Bouquets!

—Cincinnati.

Editor: All I can say about PULP & PAPER's coverage of the Buckeye Cellulose mill at Foley, Florida—and probably all I need to say—is . . . It was worth waiting for!

S. A. SHADDIX
Procter & Gamble Co.

—St. Francisville, La.

Editor: I thought your exclusive article on the new St. Francisville Paper Co. in Louisiana was really great and the pictures and factual portions were exceptionaly well done. The article was well received here.

R. W. LOYST
Crown Zellerbach Corp.

"Extremely Useful"

—Tokyo.

Editor: We always find the contents of PULP & PAPER extremely interesting.

We are lately in receipt of your 1959 World Review Number which is, we should say, the only reliable source of information of the overall aspects of the world pulp and paper industry.

CHUZO ARAKAWA
Executive Vice President
Nippon Pulp Industry Co.

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...when Gottesman enters the picture! The assurance of excellent service developed by over 70 years of experience. Pulp sources that furnish quality in every grade. Shipments that are always on schedule. Suppliers ready to offer technical assistance. In total, you get Gottesman service: the kind of special attention to detail you know you can count on, every time!

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MONTHLY REPORT – WORLD NEWS

SWEDISH PRODUCTION UP . . . for first six months, with paper and board output 11% above last year. Exports increased 8%. . . . Pulp 3% below year ago. Exports, however, are healthy, outlook optimistic.

CELLULOSE WADDING MACHINE FOR POLAND . . . will be by Millspaugh Ltd., Sheffield, England. Contract said to be worth "hundreds of thousands of pounds." Millspaugh negotiating for further Polish contracts.

PRODUCTION UP IN FINLAND . . . for first six months. Paper at 582,000 tons was up 35,000 from 1958; board at 207,000, up 6,000; chemical pulp at 1,058,000, up 32,000. Although mechanical pulp export showed increase, production for export was down 6,000 tons.

$22,000,000 MILL IN JAPAN . . . was recently completed by Honshu Paper Mfg. Co. Ltd. at Kushiro. Said to be the largest in the Orient, the plant will produce 100,000 annual tons—40% of Japan's present production.

LONG JOURNEY FOR MACHINE CYLINDER . . . Liverpool, England, to the Apcel mill of Australian Paper Manufacturers Ltd. . . . some 12,700 miles. Trip was taken recently by a giant paper machine drying cylinder manufactured by Bentley & Jackson Ltd.

U.S. MACHINE TO FINLAND . . . where G. A. Serlachius Oy has ordered a Beloit Iron Works unit for its Mantta mills. The first machine of its kind ordered for Finland, it will produce crepes at up to 2,500 fpm, will replace three older machines.

113% INCREASE IN WORLD CONSUMPTION . . . of paper and board is reported by FAO—from 30,000,000 tons in 1938 to 64,000,000 in 1955.

PACKING PAPER ONE-THIRD TOTAL CONSUMPTION . . . in Common Market countries. According to latest figures, EEC nations consumed 3,000,000 tons (2,700,000 metric). Of this, 33% was kraft, 7% greaseproof and parchment, 60% other types. (Some 40% of the kraft was imported.)

75th ANNNIVERSARY IN NORWAY . . . AS Ranheim Papirfabrik, near Trondheim, recently marked its diamond jubilee. The firm has invested Kr 48,000,000 (about $6,720,-000) on modernization and expansion since the end of the war.

NEW IN FINLAND . . . Oy Kaukas AB is building an evaporation and steam boiler plant; completion set for late 1960. Evaporation effect will be 80 tons waste liquor per hour; boiler capacity, 80 tons steam per hour. Approximately 80% of waste liquor is to be burned as fuel.

INTERNATIONAL LICENSING OF CLUPAK . . . is announced by Clupak Inc., U.S.A. firm that owns trademark and patents on the tough flexible paper. Program already includes Swedish and Canadian mills, as well as nine U.S. producers.

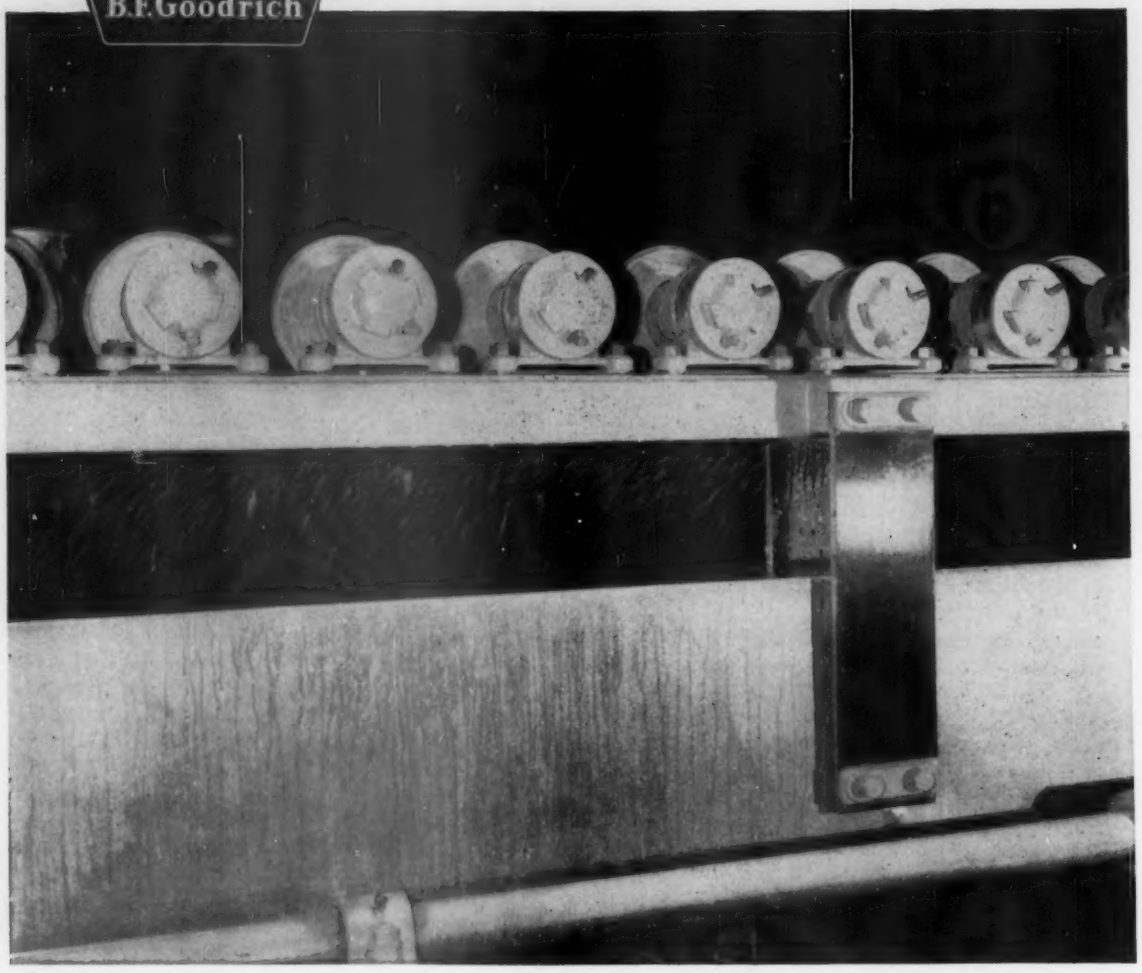
32% BOOST IN GROUNDWOOD PULP OUTPUT . . . at Whakatane Board Mills Ltd., Whakatane, N.Z., results from new AB Kamyr (Sweden) grinder. By the end of 1959 board capacity will be 40,000 tons compared to 11,000 in 1939.

SHIP-TO-SHORE POWER TRANSFER IN NORWAY . . . where drought has brought rationing of electricity. As production is hampered, some firms seek other power sources. AS Union has acquired the U.S. T-2 tanker Etyde, whose engines have capacity for 4,000 hp, to operate its grindmill and paper machines.

BRITISH COATING PLANT IN OPERATION . . . Clyde Paper Co. Ltd. has installed a Jagenberg Werke AG coater at its Rutherglen mill. The unit is believed to be the largest, most modern of its kind in Europe.

NEW MILL FOR SOUTH AFRICA . . . planned by Piet Reteif Paper Mill, recently-organized firm. Construction on Transvaal plant is expected in 1960, with production scheduled for either 1962 or 1963.

B.F.Goodrich



Spotting stops when water goes down, not around

THOSE B.F.Goodrich Dukbak table rolls shed water fast, throw it down and away, not back up against the wire. Even rolls running at 1000 feet a minute need no deflectors. As a result water is removed more uniformly, there's no danger of water spotting the sheet, paper formation is improved.

B.F.Goodrich Dukbak rolls are dynamically balanced to prevent whipping even at highest speeds. They are ground straight and true, move evenly with the wire without developing high or low spots. The sheet that's produced is smooth, uniform.

In addition to better performance, B.F.Goodrich Dukbak table rolls have many other cost-saving advantages. Cover separation is impossible because the rubber is locked to steel by the patented Vulcalock process, the strongest rubber-to-steel adhesion known today. Corrosion is impossible because the ends are sealed against moisture. And, after years of hard service, Dukbak rolls can be reground as good as new.

Let a B.F.Goodrich man show you how these longer-lasting rolls can improve the quality of your paper. And if you are buying a new fourdrinier, or having one rebuilt, be sure to specify B.F.Goodrich Dukbak to your machine builder. *B.F.Goodrich Industrial Products Company, Department M-753, Akron 18, Ohio.*

B.F.Goodrich ***paper mill rolls***

MONTHLY REPORT – WORLD NEWS

HARDWOOD NEWSPRINT A SUCCESS IN U. S. A. . . . where Noralyn Paper Mills Inc. is building a $40,000,000 mill in Baton Rouge, La. Based on a process developed by Noralyn and Herty Foundation laboratories, Savannah, Ga., newsprint from hardwood pulp was recently produced on 110-in. machine at Combined Locks Paper Co., Combined Locks, Wis. It was printed at the Milwaukee Journal, New York Times and Savannah Evening Press. New mill's daily capacity: 350 tons.

$175,000 RESEARCH BUILDING . . . for Champion Paper & Fibre Co., Hamilton, Ohio, will adjoin new general office building now under construction.

WISCONSIN TOPS U.S. . . . Among 42 paper-producing states, Wisconsin ranks first in sales dollars, production, capital investment and federal and state taxes paid. Some 197 plants (including converters) employ 40,000 in annual production of more than 3,300,000 tons . . . of pulp, paper, paperboard.

NEW INTEREST IN DIMETHYL SULFOXIDE . . . aroused with announcement that Crown Zellerbach Corp. will build plant in Bogalusa, La. Annual capacity: 5,000,-000 lbs. The solvent—derived from lignin produced in kraft pulping—has a vast potential of industrial applications.

RECORD-SETTING PROMOTION OF HOUSEHOLD PRODUCTS . . . planned by Safeway Stores Inc., Seattle, Wash. Involved is the largest single purchase of Scott Paper Co. household products by a retail grocery firm in the Northwest—30 carloads with a wholesale value of $115,740.56. . . . Fifteen of the carloads are products of a type not made by Scott before World War II.

STEEL STRIKE PINCH . . . Several large suppliers to the paper industry feel the pinch of the steel shortage. Warehouse of one big U.S. equipment firm was almost down to the bare floor when the court ordered steel workers back to their jobs.

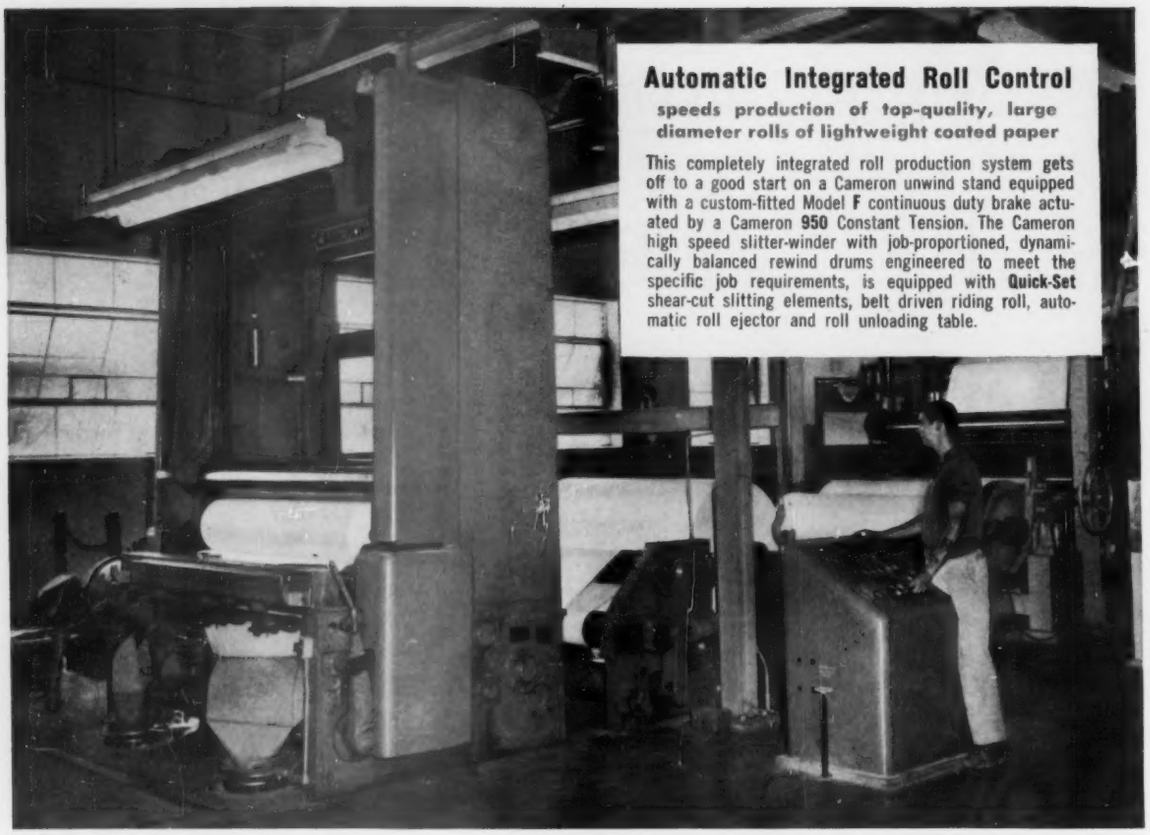
NEW RECORDS IN WOOD PULP USED . . . and produced are predicted by Lawson P. Turcotte, president of Puget Sound Pulp & Timber Co. Most improvement is in dissolving and sulfite grades, with bleached sulfite—although better than a year ago—still below the 1956 record. Greater quantities of market pulp are being consumed by converting mills, with Scandinavia the principal beneficiary of stepped-up demand.

FOR 1959: A NEW RECORD . . . in U.S. production of paper and board. Some observers say that the old 1956 record will be topped by 8%. The 34,000,000 tons (29,-940,000 metric) predicted for 1959 will be 10% above last year. Same observers say that output of paper and allied products should "top out" in 1960.

U.S. NEWSPAPERS HAD THIRD BEST MONEY YEAR . . . in 1958, with advertising revenue totaling $3,192,800,000—31% of total advertising dollar volume. A survey of national advertisers showed the majority expect to increase their advertising by 10% in 1960.

"RUNNING FULL" AGAIN AT KALAMAZOO, MICH. . . . Allied Paper Corp. has started idle machines, the last one being No. 10 at the Monarch mill. Completely modernized in a $300,000 program: stock preparation, refining and drying systems. Horizontal size press was added to No. 10. Finishing dept. was to resume operations in November.

EXPECTED INCREASE FOR NORTH AMERICAN NEWSPRINT EXPORTS . . . is predicted by New York, N.Y. stock analyst: "Exports are expected to increase slowly, since foreign capacity has kept pace with growth in demand. . . . On the supply side, North American capacity is now 9,900,000 tons (9,009,000 metric); we expect capacity to be 10,100,000 tons in 1960 and 10,-200,000 in 1961. . . . There are apparently no capacity increases planned beyond 1961."



Automatic Integrated Roll Control

speeds production of top-quality, large diameter rolls of lightweight coated paper

This completely integrated roll production system gets off to a good start on a Cameron unwind stand equipped with a custom-fitted Model **F** continuous duty brake actuated by a Cameron **950** Constant Tension. The Cameron high speed slitter-winder with job-proportioned, dynamically balanced rewind drums engineered to meet the specific job requirements, is equipped with **Quick-Set** shear-cut slitting elements, belt driven riding roll, automatic roll ejector and roll unloading table.

Cameron Automatic Roll Control, perfectly integrated from unwind to finished rolls, assures top-quality slitting and rewinding at

5000 FPM ON LIGHTWEIGHT COATED PAPER

. . . staying well ahead of the new high speed coating operation at Crocker Burbank Company's Number 3 Mill, Fitchburg, Massachusetts.

New high speeds are multiplying the risks in fast new printing and converting operations. Printers and converters can no longer afford the cost of poor quality rolls, web breaks, damaged materials, or rolls that peter out too quickly on long runs. There is an increasing need for perfect, clean-cut, large diameter rolls of uniform density. That is why leading finishing room superintendents agree on this point — the modern, high speed, roll production system must be custom-engineered by specialists to provide automatic, integrated roll control from unwind to finished rolls.

Write now for literature on Cameron high speed slitter-winders, unwinds and web controls for paper mills and finishing rooms.

Cameron Machine Company, Franklin Road, Dover, N. J.

Canada: Cameron Machine Co. of Canada, Ltd., 15 Hatt St., Dundas, Ontario

France: Batignolles-Chatillon, 5 Rue De Monttessuy, Paris (7e) France

CAMERON

a team of specialists

AA-370

53 years devoted exclusively to the design and manufacture of slitting, roll winding, unwind and web control equipment.

MONTHLY REPORT – WORLD NEWS

INTERESTED, BUT NOT BUILDING NOW . . . was reply recently given by Diamond Gardner Corp. to rumors that it would soon construct a pulp mill in northern Idaho. The firm purchased a prospective plant site near Laclede about three years ago. According to Henry L. Kerr, mgr., Northwest Lumber Manufacturing div., even the type of plant (lumber, pulp or both) has not as yet been decided.

THREE NEW MILLS . . . A southern engineering firm is reportedly working on plans for three new mills.

BIGGER SHARE OF PAPER PACKAGING MARKET . . . is aim of Union Bag-Camp Paper Corp. Says President Alexander Calder Jr.: "We have established a research center in Hoboken, N.J., and are spending over $1,000,000 this year on product research. . . . Union Bag is heading in two directions. We want to establish box plants near markets, and we want to develop more products for the packaging field."

BOWATER TO MAKE PAPER AT CATAWBA . . . Hot on the heels of the dedication of its sulfate pulp mill at Catawba, S.C. (see PULP & PAPER, November 1959), Bowater Carolina Corp. announces a $30,000,000 paper mill.

DIVERSIFICATION INCREASED . . . by Boise Cascade Corp., which will build corrugated shipping container plant in Denver, Colo. Completion set for late spring. (See story on Cascade Kraft this issue.)

LIGHTWEIGHT PAPER FOR LETTERPRESS . . . is reported by Ecusta Paper Products, Pisgah Forest, N.C. Newest addition to Waylite line, paper has a basis weight of 17-1/4 lbs. and uses a sulfate furnish. (Firm is part of Packaging div., Olin Mathieson Chemical Corp.)

PAPER GRADE MARKET PULP CONSUMPTION UP . . . Eight-month figures for 1959 and 1958 were 1,780,927 and 1,667,862 tons respectively, up 6.7%

HOPSCOTCHING THE NORTH AMERICAN INDUSTRY . . . St. Regis Paper Co. is building a $1,500,000 bag plant in Los Angeles, Cal. . . . Standard Packaging Corp.'s Royal Lace Paper div. is now located in a new Fort Wayne, Ind. building. The plant (173,250 sq. ft.) replaces an outdated Brooklyn, N.Y. facility. . . . United States Packaging Corp., subsidiary of Rap-In-Wax Paper Co., has purchased a 50,000-sq. ft. building in S. Hackensack, N.J. . . . Transfer of corrugated container production from Essexville, Mich., to new plant in Owosso is announced by Packaging div., Olin Mathieson Chemical Corp. Production capacity has been tripled as part of a $12,000,000 over-all plant improvement program. . . . Fortifiber Corp., Los Angeles bag manufacturer, is building a 40,000-sq. ft. plant in Memphis, Tenn. . . . Construction nearing completion on 25,000-sq. ft. Des Moines, Iowa plant of Cupples-Hesse Co., a division of St. Regis Paper Co. Daily envelope production is to increase to 1,250,000.

THE NORTH AMERICAN INDUSTRY . . . Nicolet Paper Corp.'s new 160-in Valley Iron Works glassine machine was to be trucked to the W. DePere, Wis. mill in November. . . . It's up to directors and shareholders whether Downing Box Co., Milwaukee, becomes part of Longview Fibre Co., Longview, Wash. . . . Brown Co., Berlin, N.H., has acquired controlling interest in Resi-Chem Corp., Swanton, Ohio producer of wet-strength resins, adhesives and synthetic resins in general. . . . National Gypsum Co. has completed expansion of its Savannah, Ga. plant, making it the "largest gypsum plant in the world". . . . St. Regis Paper Co. has filed with SEC a statement relative to exchange of stock for shares of Birmingham Paper Co., Birmingham, Ala. manufacturer of tablets and other school supplies. . . . Sonoco Products Co., Hartsville, S.C., will build a $200,000 converting operation at Longview, Texas.

Which of these 3 products and services can you use from BECCO?

"Enclosing $1.00 — Send Patent License"

Well, perhaps there's a little more to your gaining use of Becco patents than just mailing your dollar in, but not much more. And certainly, no more money. The $1.00 really does cover it.

Becco has lots of patents, granted as a result of innovations in the use of Hydrogen Peroxide and other Peroxygen chemicals developed in Becco's Research Laboratories. But they don't do us a whole lot of good locked tightly in our safe. So, we long ago adopted the following policy:

If one of our patents can help you, we'll be glad to license the rights to you **perpetually**, for just one dollar. You get a nice certificate, incidentally, to cover the legalities, but more important – you also get free our complete engineering help in setting up your process, handling the material, maintenance, etc., etc.

What do **we** get? You as a **customer** – we hope – but there's no obligation on your part. Just seems to work out that way, though – when we know enough about a particular peroxygen to hold a patent on its use, chances are we've also learned enough to produce it purer than anyone else. You benefit from this; we do, too.

Use the coupon below to ask for a Sales Engineer – or our list of patents – that may help you solve an important problem.

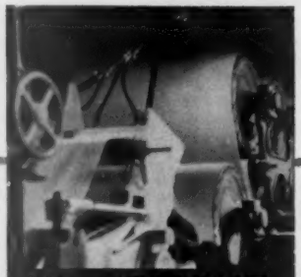
BECCO fmc

BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York
Dept. PP-F

Gentlemen:
Please send your list of patents available on the use of

- ☐ Hydrogen Peroxide
- ☐ Peroxygen Chemicals
- ☐ Persulfate Chemicals
- ☐ Please have a Sales Engineer call.

NAME_____
FIRM_____
ADDRESS_____
CITY_____
ZONE____ STATE_____



How BRIGHT Is BRIGHT?

That's a hard question to answer. It depends on how the pulp is treated.

Trouble is, paper can show an 86 level at the layboy, but by the time the paper is delivered, this has dropped to 82 or lower. With conventional bleaching methods, that is.

Many chemical pulp producers have found the answer to this problem in Becco's Dryer Steep Bleaching Process (patented, but licensed perpetually for one buck). Applied by means of spray pipes across the pulp sheet ahead of the dryers, Becco Hydrogen Peroxide increases brightness permanence and bleaches in transit. Often, in fact, an 86 layboy level **improves** to 88 by delivery time.

This is just one example. Becco has a vast amount of technical knowledge compiled from 31 years of experience with all types of pulp. If you'd like help with your pulp, free of any obligation, let us know with the coupon below.

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BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York
Dept. PP-C

Gentlemen:
We would like help with our pulp. Please have a Becco Sales Engineer call.

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Problems in handling Hydrogen Peroxide

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Becco's Four-Fold Engineering Service Program—offered free—includes:

1. Comprehensive survey of your facilities.
2. Specific proposal with recommendation of proved equipment and where it is obtainable.
3. Installation supervision by Becco.
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Can you use this free Becco help, based on more years of experience with bulk handling of H_2O_2 than any other manufacturer? Use the coupon to let us know.

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BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York
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Gentlemen:
Please tell me more about your Four-Fold Engineering Service.

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WORLD PULP & PAPER Technical News

Cereal Straw Pulp—Egypt

FAHMY, YEHIA, and FADL, MOHAMMED. (Natl. Research Centre, Cairo). Das Papier 13, no. 13/14: 311-14 (July, 1959). [Ger.] Abstr. Bull. I.P.C. 30: 213-14.

In the alk. pulping of wheat and rice-straws, the duration of the cook was found to exert a greater influence on the solubility of mineral matter than did the amount of cooking chemical; the liquor ratio, the temp., or the liquor pH. Wheat straw pulps prepared by cooking for 15 min. at 170° C. contained less ash and were stronger than those produced by longer digestions under the same conditions. Cooking variables other than time did not significantly influence ash removal. Rice straw cooked at 150° was lower in ash and silica when digested for 0.5 hr. than for 4 hr. This was more evident for pulps from leaves than from stalks. Bleached pulps from rice stalks cooked under optimum conditions (30 min. at 120°) contained 0.064% silica and 0.15% total ash.

Extracted Oak Pulp—Poland

KOWALSKI, JAN. Przeglad Papierniczy 15, no. 5: 133-6 (May, 1959). [Polish] (Abstr. Bull. I.P.C. 30: 217.

Extracted oakwood chips having a dryness of about 90% and cellulose, lignin, and pentosan contents of 39, 20, and 20%, respectively, were pulped by the NSSC process at 150, 160, and 170°C. with and without preimpregnation at 115° In all runs, the cooking time at max. temp. was 2 hr., and the liquid:solids ratio 4.5:1. The pulp yield ranged from 64% (at 170°) to 84% (at 150°). Preimpregnation lowered the yield by *ca.* 4% and increased the beatability of the pulps and the mechanical strength of test sheets only slightly. The replacement of sodium carbonate buffer by sodium sulfide improved the mechanical properties (breaking length, tear, and bursting strength) of test sheets but at the same time lowered the pulp yield by about 6%. Cooking at 170° with sodium carbonate buffer without preimpregnation was the most economical schedule. Pulps obtained under these conditions gave a yield of 64-67% and were beaten easily. At 60-65° Schopper-Riegler, their breaking length and bursting strength were comparable to those of oakwood kraft pulps, although their tearing strength was somewhat lower. They are suitable for the manufacture of multi-ply board cores and, in blends with long-fiber pulps, for most types of boards used in packaging.

Presented with permission of The Institute of Paper Chemistry, under supervision of Curtis L. Brown, editor of IPC Bulletin. Photostats or translations of original reports available at reasonable cost by writing Eugene Bunker, librarian. Institute of Paper Chemistry, PO Box 498, Appleton, Wis., U.S.A.

Hardwood Pulp Properties

KLAUDITZ, W., BERLING, K., and JACOBSEN, H. Das Papier 13, no. 13/14: 287-92 (July, 1959). [Ger.] Abstr. Bull. I.P.C. 30: 216.

Shavings 0.2-0.5 mm. thick of beech, birch, poplar, hornbeam, and red oak were sprayed and shaken with 5-7% sodium hydroxide solutions at a wood:liquor ratio of 10:1, and the mixture was conditioned at 20°C. for 4-6 hr. and then heated at 35-40° for 2-3 hr. This treatment represented a modified cold soda pulping process. Pulps were obtained in 93-94% yield and, when beaten to 60° Schopper-Riegler, showed a breaking length of 2000-4000 m. The treatment eliminated most of the acetyl groups present in wood, but had only a slight effect on the lignin content and almost no effect on the pentosans. Hornbeam, aspen, and birch gave the strongest pulps. Fiberboard made from beechwood by this lab process showed satisfactory strength properties. Hardwood shavings treated with calcium hydroxide (in a "cold lime" process) gave fiberboards with properties resembling those made from cold soda pulps. Mixtures of beech and birch yielded satisfactory cold soda pulps, but birch alone usually gave better results.

Hydrophobization—Russia

VORONKOV, M. G., DAVYDOVA, V. P., and GRISHANINA, N. P. Zhur. Priklad. Khim. 32, no. 5: 1106-12 (May, 1959). [Russ.] Abstr. Bull. I.P.C. 30: 161.

Samples of lab filter paper, two-side-M.G. kraft paper, and one-side-glazed sulfite wrapping paper were impregnated by immersing them in toluene solutions of various alkylacetoxysilanes and -siloxanes, evaporating the solvent, and drying at 105-110° C. The treatment considerably increased the water resistance and reduced the water absorption of paper. The best results were obtained by hydrophobization of paper with mixtures of dialkyldiacetoxysilanes and tetracetoxysilane and using as polymerization catalyst the ethyl ester of orthotitanic acid. Thus, treatment with 5% solutions of preparation A-12 (mixture of tetracetoxysilane and dimethyldiacetoxysilane) or A-16 (a reaction product of silicon chloride, trimethylchlorosilane, and acetic anhydride) increased the water resistance of filter paper from 2 to 100-110 cm., that of wrapping paper from 15 to 108-119 cm., and that of kraft paper from 132 to 190-221 cm.

Potassium-base Kraft—Russia

NEPENIN, YU. N., and VYBORNOVA, L. N. Zhur. Priklad. Khim. 32, no. 6: 1332-40 (June, 1959). [Russ.] Abstr. Bull. I.P.C. 30: 218.

In three series of lab experiments pinewood chips were digested at 160 and 170°C. with sodium and potassium hydroxide solutions containing 25% active alkali (expressed as sodium hydroxide on the basis of o.d. wood), at 170° with sodium and potassium hydroxide solutions containing 20 and 25% active alkali, and at 170° with white liquors containing sodium hydroxide plus sodium sulfide or potassium hydroxide plus potassium sulfide and having an active alkali content of 25% and a sulfidity of 25%. In all experiments the solution of potassium for sodium base accelerated the digestion process. The ratios of potassium- to sodium-base reaction constants were 1.10-1.27 for delignification and 1.06-1.10 for polysaccharide dissolution, resulting in a shortening of the cooking time by 6-10% when the potassium-base liquors were used. The thermal coefficient of the reaction and the pulp yield and bleachability were the same for sodium- and potassium-base cooks, but the unbleached potassium-base pulps had α-cellulose contents higher by 2-4%, were beaten more easily, and were characterized by improved mechanical strength properties (higher breaking length, stretchability, folding endurance, and tearing and bursting strengths). Bleached potassium-base pulps had a higher α-cellulose content (85-87.5%) and a somewhat lower viscosity than bleached sodium-base pulps.

From General Electric comes the all-new draw-out Limitamp control—today's most advanced medium-voltage motor starter. Designed for the control of a-c motors rated 2300 through 4600 volts and up to 3000 hp, this new air-break starter has broad application throughout industry.

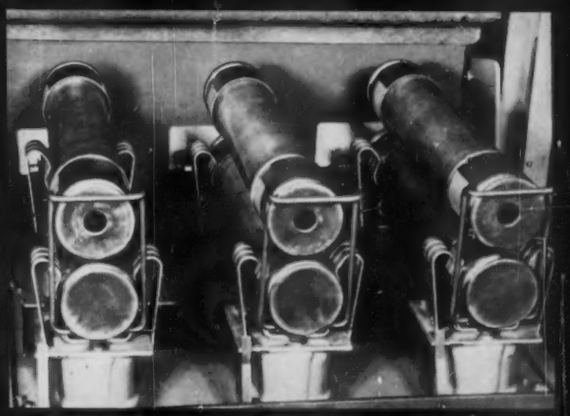
Since its introduction in 1941, Limitamp control has established a reputation for being first with the design features that add up to major user benefits. And, today's all-new Limitamp control follows this pattern with a host of design innovations that make for:

Faster installation: When you're ready to roll in the contactor—it can be done easily by one man. And, there are no connections to make—they are made automatically as the contactor rolls into place. There's plenty of space inside the panel for pulling the motor and power cables . . . and making the connections. And, with the new design, floor sills have been eliminated. This means no more grouting, no expensive cement work, simplified lineup with other panels.

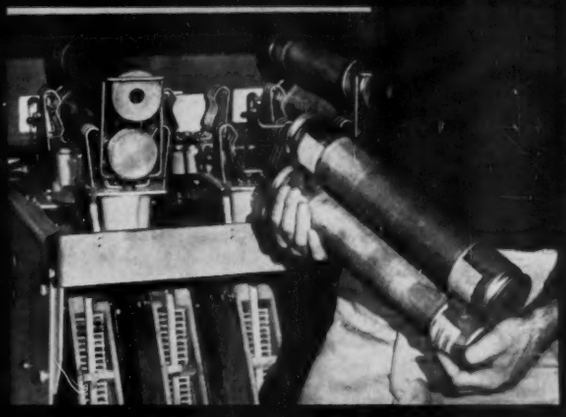
Simpler, safer operation: One handle now controls the complete operation of connecting and disconnecting the starter from the bus and mechanically locking the high-voltage compartment door. A unique interlocking system protects the unit from misuse.

Superior protection: General Electric's new Limitamp

INSTALLS IN HALF THE TIME—Draw-out air break contactor, roomy isolated cable compartments, and increased working space help simplify installation.



LIMITAMP CONTROL IS ISOLATED AUTOMATICALLY—A unique shutter box isolates the starter from high-voltage power when the operating handle is turned to the off position.



INTERRUPTS FAULT IN FIRST ½ CYCLE—Fast-acting, current-limiting fuses interrupt circuit before short circuits cause damage to valuable motors.

NORMAL MAINTENANCE WITH CONTACTOR IN PLACE—All components, including the high-voltage contactor, can be maintained right in the control unit, with complete safety.

LIMITAMP* CONTROL

control utilizes fast-acting current-limiting fuses, ambient-compensated overload relays, and a high-voltage contactor to provide the most "positive" protection for your motors. Proved EJ-2 fuses interrupt a fault in the first ½ cycle, thus reducing damage to valuable motors. The performance of the completely coordinated design has been exhaustively tested in General Electric's high-voltage laboratory to provide the most reliable equipment for your application.

Easier maintenance: Even with these advanced design features, new Limitamp controls are simpler than ever to maintain. All components are accessible from the front for inspection and maintenance—without removing them from the enclosure. A special test circuit is built into each unit—permitting check-out operation before the unit is put into service.

For full information on all-new Limitamp motor control, contact your G-E Apparatus Sales Engineer or Agent today. Or write Sect. 783-10, General Electric Co., Schenectady, N. Y., for Bulletin GEA-6893. Industry Control Dept., Roanoke, Virginia.

*Reg. trade-mark of General Electric Company.

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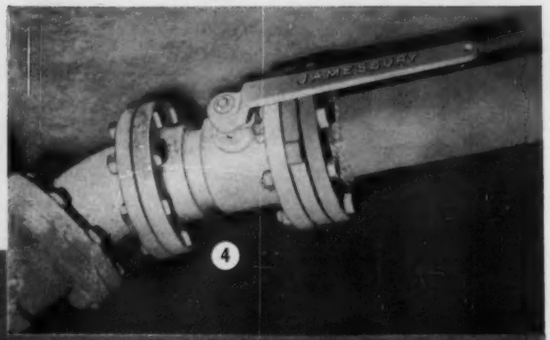
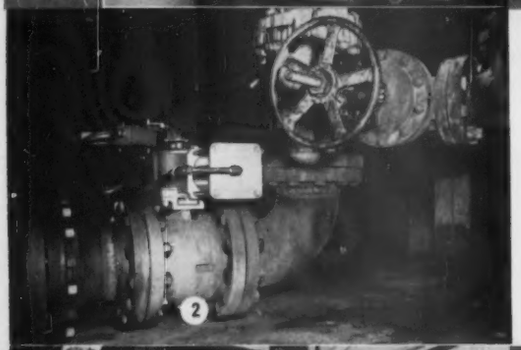
GENERAL ELECTRIC

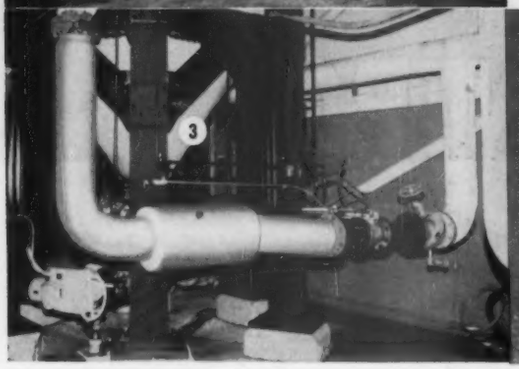
Jamesbury "Double-Seal"™ BALL VALVES

At Work in Pulp and Paper Mills

DEPENDABLE • VERSATILE







1. **MINNESOTA & ONTARIO PAPER COMPANY**
One of six 4" Jamesbury Ball Valves, with Remote Operator and 4-way solenoid valves, controlling flush-back to filter beds in H_2O precipitator at Minnesota and Ontario Paper Co., International Falls, Minn.

2. **BRUNSWICK PULP AND PAPER CO.**
View of 8" Type 316 Stainless Steel Ball Valves used on Digester Blow Service at Brunswick Pulp and Paper Co., Brunswick, Georgia.

3. **CROWN ZELLERBACH CANADA**
A Jamesbury 6" Type 316 Stainless Steel Ball Valve with TEFLON seats and seals and P-100 Operator in service handling Black and White Liquor Lines at Crown Zellerbach Canada, Ltd., Elk Falls Co., Ltd., division.

4. **SIMPSON LEE PAPER COMPANY**
A typical installation of Jamesbury 4" PVC Ball Valves as used at the Simpson Lee Paper Company, Everett, Washington, for their Bleach Lines.

The Jamesbury Ball Valve Principle

The Jamesbury Ball Valve controls the flow of media by means of a round port through the ball. The valve is fully opened or closed with a quarter turn.

The Ball is preloaded between two specially designed seats which are self-compensating for temperature, pressure and wear. This feature assures zero leakage throughout tens of thousands of cycles.

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For details on types, sizes, materials, etc., ask for our new brochure entitled "The Jamesbury Ball Valve in Pulp and Paper Mills."

JAMESBURY CORP., 148 New Street, Worcester, Mass.

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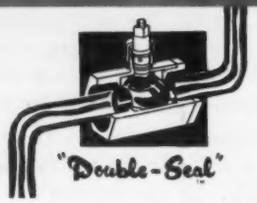

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UNVARNISHED TRUTH—Alpha® Protein improves brilliance of process colors

It takes a brighter, whiter, smoother, more uniform paper to snap out contrasting color in crisp detail without resorting to a varnish coat. The same is true when using the new gloss inks.

These fine paper qualities result when Alpha Protein is used as the coating adhesive. More than that, it lowers production costs.

Coating mill operators report that the extra solids possible with Alpha Protein give production increases up to 15%. More solids result in faster drying, faster machine speeds, higher coat weights.

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This is a sample of 4-color process lithography on Alpha Protein-processed paper

When it comes to Pulpstone Service . . .

your NORTON man is there!

Typical of the men who make up Norton's world-wide service organization of pulpstone engineers is J. H. (Jim) Perry, whose broad technical knowledge and practical mill experience have proved invaluable to pulpstone users throughout the length and breadth of the United States.

No matter where your mill is located, there's a Norton pulpstone engineer, like Jim Perry, within reach. He will be glad to study your mill and to make specific recommendations based on your wood, your type of grinders and the quality pulp you want to produce.

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Making better products . . . to make your products better

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Norton Company of Canada Ltd., Hamilton, Ont.
EXPORT: Norton Behr-Manning Overseas Inc., Worcester 6, Mass.

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PULPSTONES

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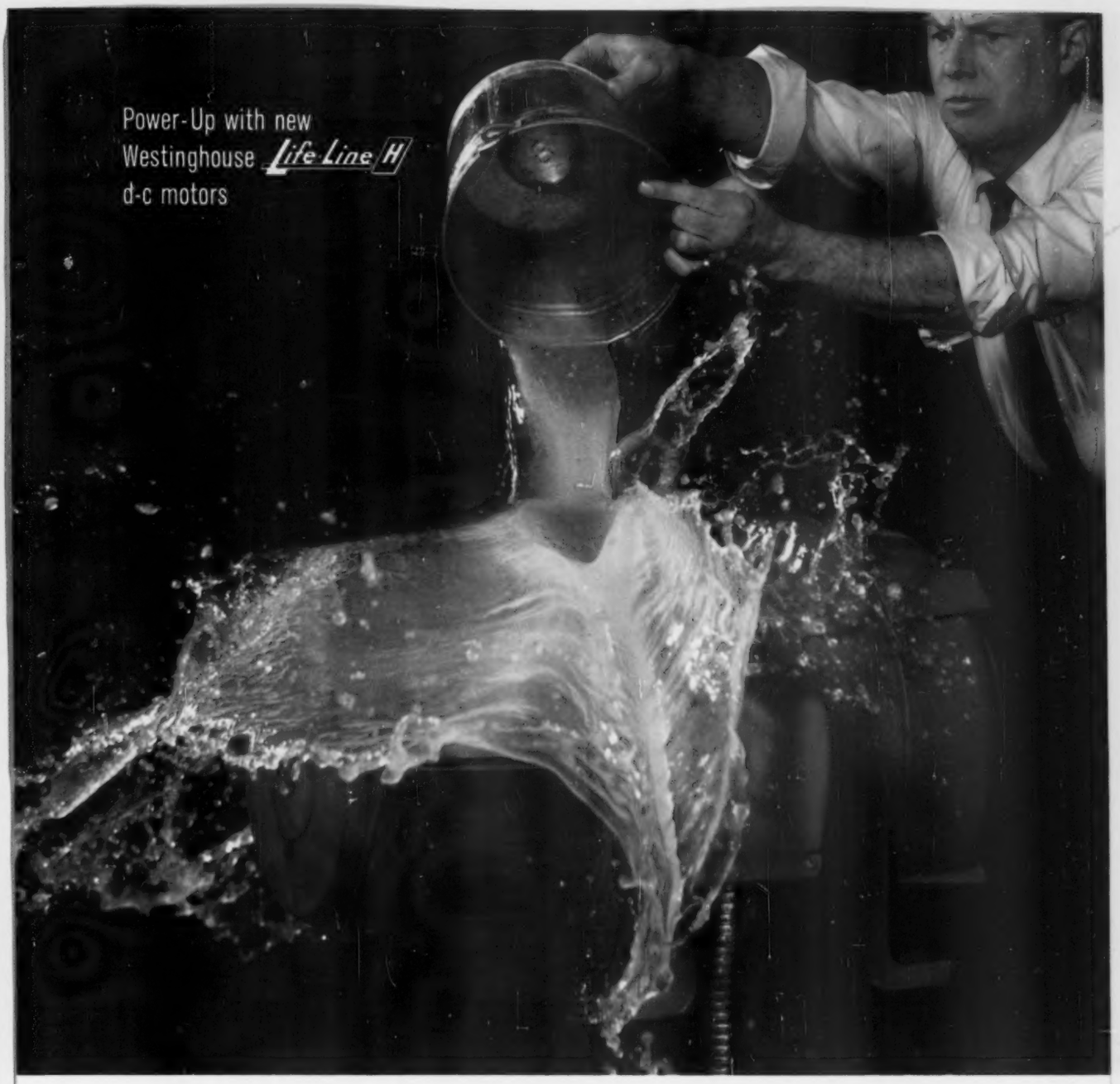


Greater protection . . . maximum reliability . . . longer, trouble-free life

HERE'S WHY: The rugged new Westinghouse Life-Line® "H" d-c motor gives you the most complete and advanced protection available in dripproof industrial d-c machines. Elimination of uncovered side openings . . . use of heavy, cast end brackets . . . effective seals throughout . . . all combine to provide outstanding resistance to liquids, vapors and dirt. For these reasons you can count on the Life-Line "H" to give you greater reliability with a minimum amount of maintenance under *all* operating conditions.

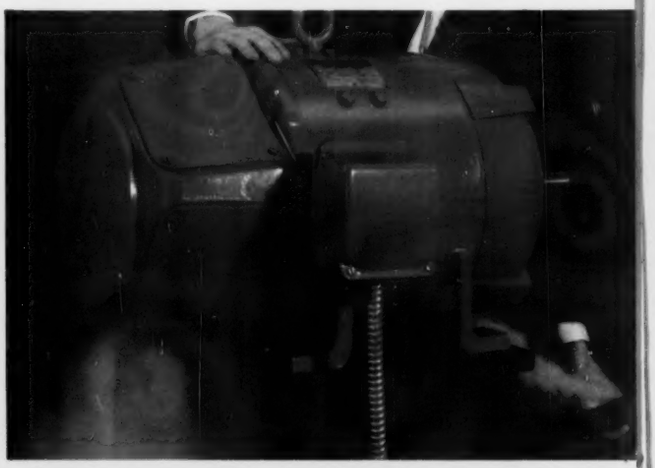
Plus . . . these other important advantages .....

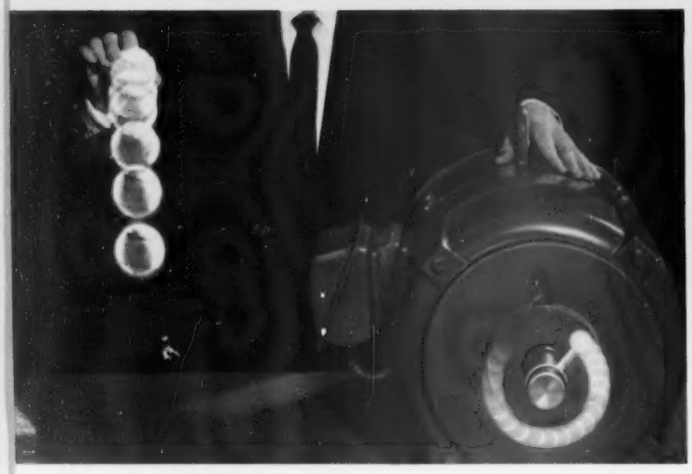
YOU CAN BE SURE . . . IF IT'S Westinghouse

These exclusive features of the new Westinghouse Life-Line H d-c motor guarantee top performance . . . longer, trouble-free life

TEN TIMES LONGER INSULATION LIFE . . . New silicone insulation in Westinghouse Life-Line® "H" d-c motors and generators stands up under temperatures which turn ordinary insulation to a cinder. High-temperature silicone insulation is used with the full complement of iron and copper required for low Class B temperature. Result: Life-Line "H" shrugs off emergency overloads and abnormal ambients to keep production rolling, maintenance down.

CLEANER, COOLER OPERATION results from new controlled ventilation system of Life-Line "H." Ordinary d-c motors draw air in at commutator end, contaminate windings by drawing carbon dust from commutator brush wear *into* the machine. Life-Line "H" reverses this flow. Air and carbon dust are expelled at commutator end . . . assuring cleaner, cooler windings . . . longer motor life . . . less maintenance.





FASTEST RESPONSE . . . 35 per cent increase in commutating ability . . . up to 55 per cent lower mechanical inertia . . . and up to 30 per cent reduction in electrical inertia mean that the new Westinghouse Life-Line "H" d-c motor provides the fastest acceleration, quickest reversing and closest speed regulation. This means more production, better product quality, minimum complexity of control.

SIMPLIFIED MAINTENANCE . . . With the new Life-Line "H," maintenance is not only substantially reduced but periodic inspections are also greatly simplified. For example: as shown above, Uniforce brushholder fingers lock out . . . brushes can be inspected or changed with one hand. And Uniforce tension remains constant throughout brush life . . . no need to adjust pressure as brushes wear.

For information about the ways you can profitably put the new Life-Line "H" motor to work, contact your nearby Westinghouse representative. Or, write Westinghouse Electric Corporation, P. O. Box 868, 3 Gateway Center, Pittsburgh 30, Pa. JI-22121

YOU CAN BE SURE...IF IT'S Westinghouse

Belted out 2,200,000 cords—lasted twice as long

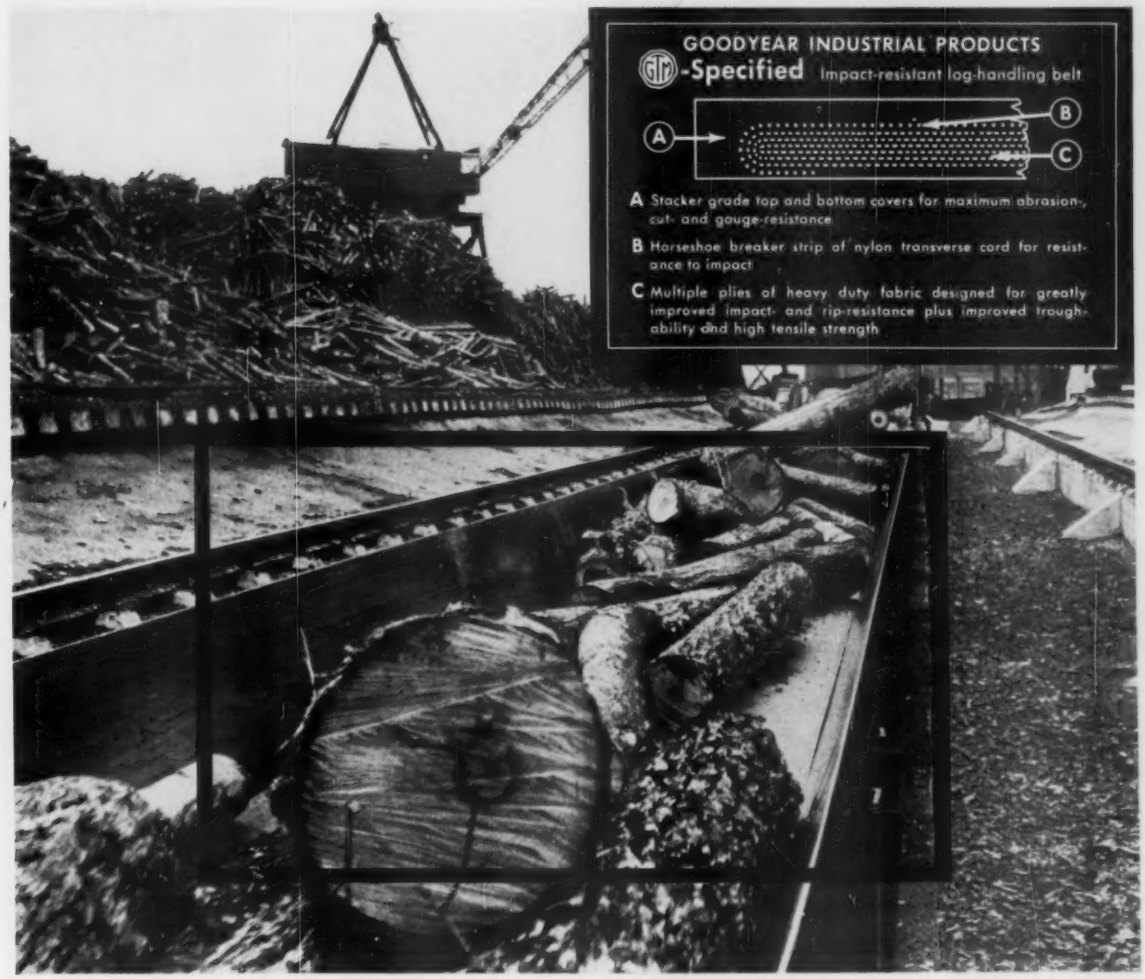
"Unbarked logs will chew any rubber belting to pieces," the scoffers claimed. But that didn't stop this big East Coast paper mill from replacing chain conveyors with a complete rubber system more than ten years ago.

The G.T.M.—Goodyear Technical Man—had pointed out that one rubber belt with 700-foot centers could do the work of two to three shorter chain-type conveyors. And a rubber belting system would take substantially less power—even at greatly stepped-up belt-speed.

But the real pay-off: in the 10 years since original installation, the G.T.M.'s belts have proved *twice* as long-lasting as the former chain conveyor. Maintenance has been cut. And even in a rare case or two of accidental damage, belts have proved easier, quicker and less expensive to repair.

Here, then, is still another case where the G.T.M.'s recommendation—and the right industrial rubber—meant never-before-achieved efficiency and savings. For expert advice on materials handling problems, contact the G.T.M. through your Goodyear Distributor—or by writing Goodyear, Industrial Products Division, Akron 16, Ohio.

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*


GOODYEAR INDUSTRIAL PRODUCTS
GTM-Specified Impact-resistant log-handling belt
A
B
C
A Stacker grade top and bottom covers for maximum abrasion-, cut- and gouge-resistance
B Horseshoe breaker strip of nylon transverse cord for resistance to impact
C Multiple plies of heavy duty fabric designed for greatly improved impact- and rip-resistance plus improved troughability and high tensile strength

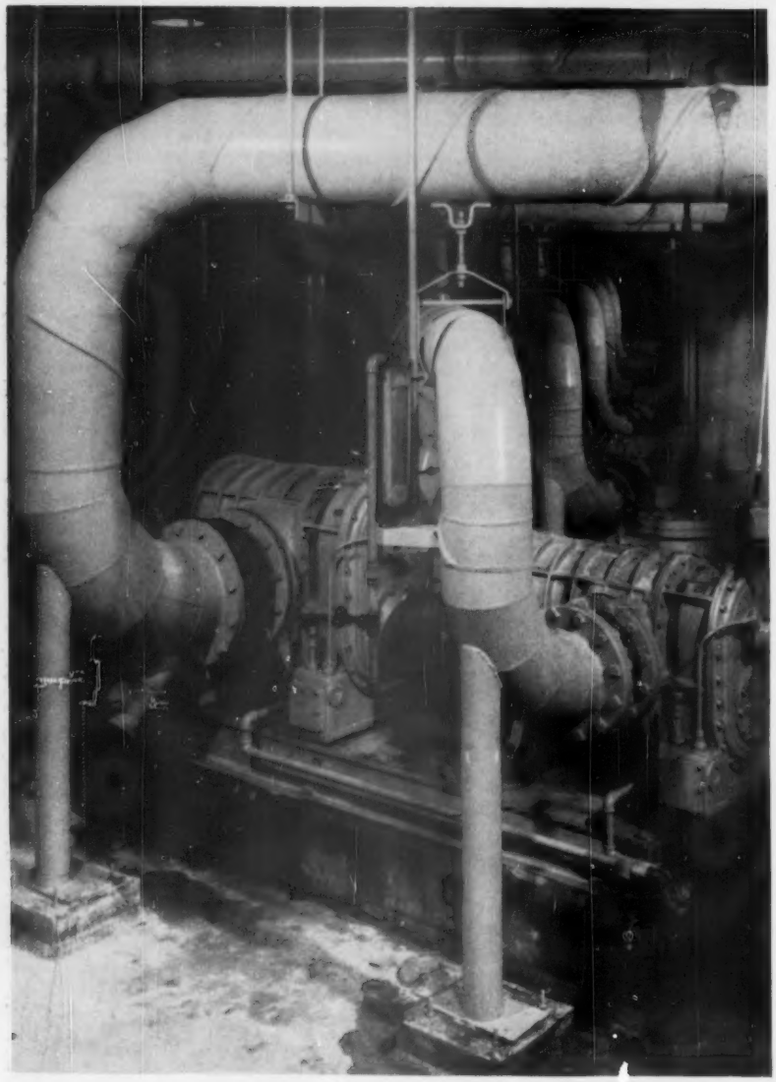
CONVEYOR BELTS BY

GOODYEAR

THE GREATEST NAME IN RUBBER

PERFECT FIT

For Your Piping Layout



NAYLOR fits into your piping picture with lightweight Spiralweld pipe, standard fittings, and special fabrications.

The pipe comes in sizes from 4″ to 30″ in diameter and wall thickness from 14 to 8 gauge —in standard lengths of 20 and 40 feet, or cut to exact lengths specified.

Standard fittings for lightweight pipe are carried in stock in carbon steel with 10 gauge wall thickness. Available in steel, alloys, and stainless steel in thickness up to ⅜ inch.

Special fittings fabricated to specifications in a range from 3 inches to 44 inches in diameter and wall thickness up to ⅜ inch for a perfect fit to your requirements.

Write for Bulletin No. 59 and send specifications for quotation.

NAYLOR PIPE *Company*

1271 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

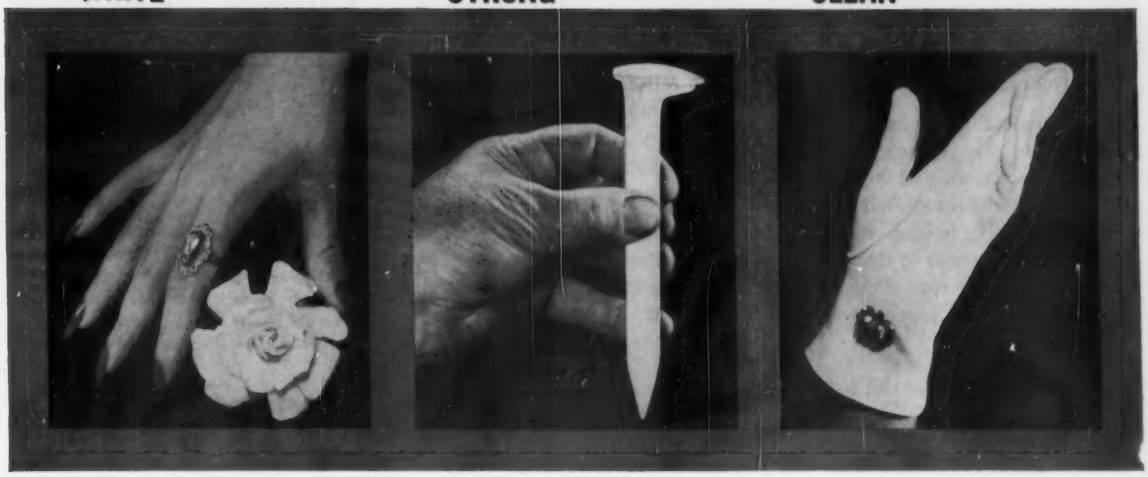
PUGET PULP

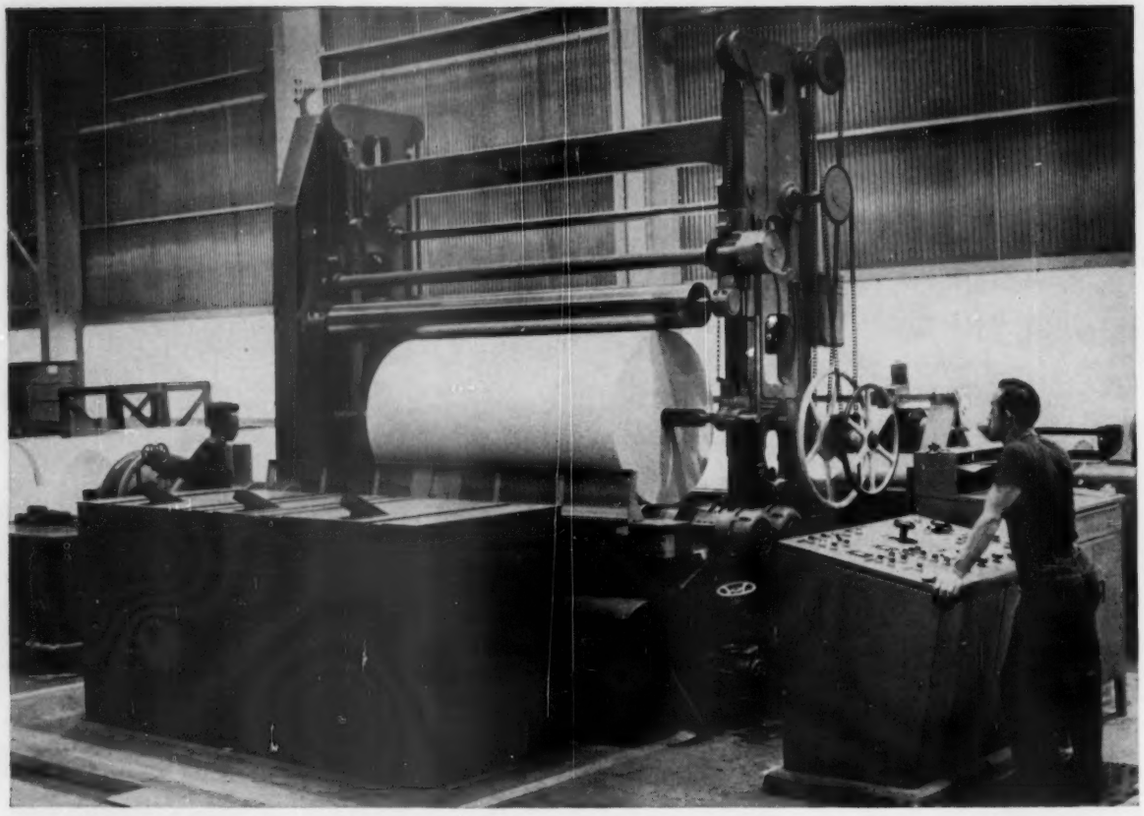
IS UNIFORM

Bleached Sulfite Pulp

PUGET SOUND PULP & TIMBER CO.
BELLINGHAM • WASHINGTON

WHITE **STRONG** **CLEAN**





One of the two 104-in. Langston Slitters and Winders in the Glatfelter mill completing rewind. Roll drop table in foreground is up, ready to receive roll when ejected by the winder, and chocks are in raised position to stop the roll. Note console incorporating all major indicators and controls.

Langston Slitters and Winders turn out tight, even rolls at Glatfelter Mill

Two 104-in. Langston Slitters and Winders have been working in the new mill of P. H. Glatfelter Co., Spring Grove, Pa., for more than a year. They have proved themselves in round the clock production on grades from fine papers to book.

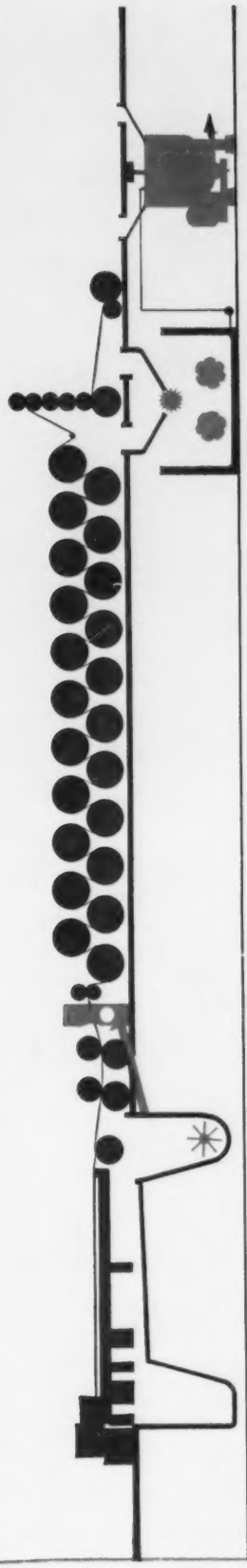
One of the most important features, according to the company, is the constant tension unwind control on the Langston Shaftless Roll Stand, which keeps the tension constant throughout the winding operation. Perfect rolls can be turned out from 9 to 100-lb. stock in roll widths from 7½ to 104 in.

The equipment can be quickly loaded and lined up on the back stand and is designed for easy threadup and gang slitter setting. Hydraulic roll ejectors move the finished rolls quickly from the winding position to the roll drop. Other features include shearcut slitters to eliminate dust; many interlocked controls for extra safety; automatic edge guide control to allow precision trim rewinding of narrow and salvage rolls.

Find out how Langston Slitters and Rewinders can benefit you. Write SAMUEL M. LANGSTON Co., 6th & Jefferson Sts., Camden 4, N.J.

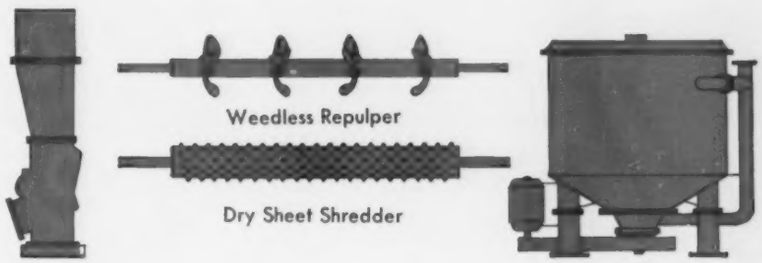
Langston Shaftless Unwind Stand eliminates back-breaking, time-consuming task of hoisting heavy shafts into place. Hydraulically operated arms reach out, pick up the roll, and raise it into running position — a 1-man, pushbutton operation.

LANGSTON leadership—by design



IMPCO OFFERS COMPLETE *BROKE PULPING* AT ALL POSITIONS ON YOUR PAPER MACHINE

Over two thousand Impco Agitators for every conceivable mill requirement, both before and after the paper machine, are in successful operation. As a pioneer in the designing of such equipment, Impco also regularly builds broke handling devices for various positions under the paper machine. Consequently, such units as Couch Pit Agitators, Sheet and Roped Press Broke Shredders, Dry Sheet Shredders, Solvo Pulpers and Defiberers have been developed. As a result of this mill proven experience, Impco can provide you with either a complete broke handling system or individual components.

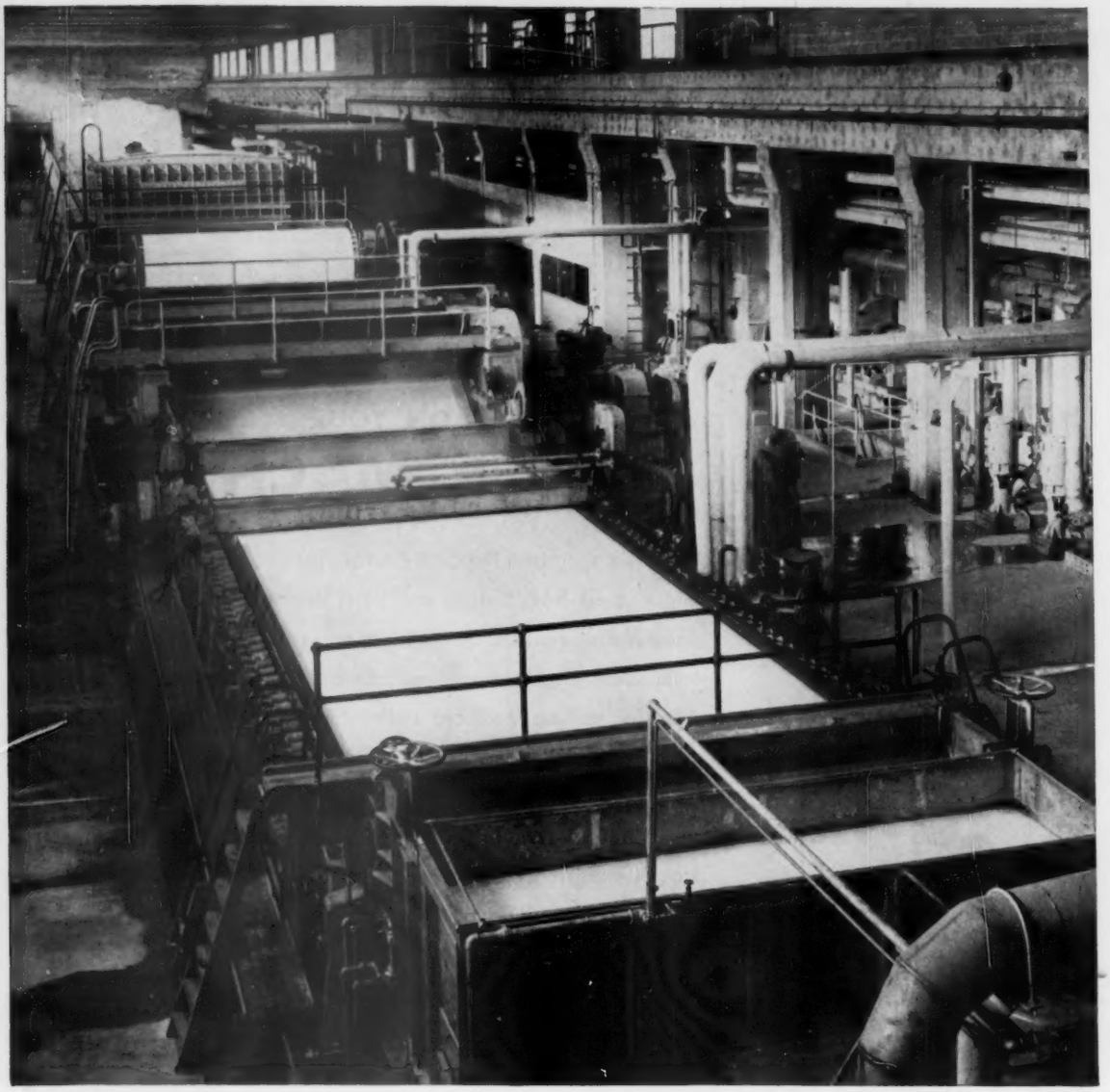


Press Broke Shredder

Solvo Pulper

IMPCO® IMPROVED MACHINERY INC.
NASHUA, NEW HAMPSHIRE

In Canada, Sherbrooke Machineries Limited, Sherbrooke, Quebec



The **DOMINION PULP DRYING MACHINE** at
British Columbia Forest Products Limited, Crofton Mill

178-inch wire width machine equipped with
Minton Vacuum Dryer — Rated capacity: 525 tons per day

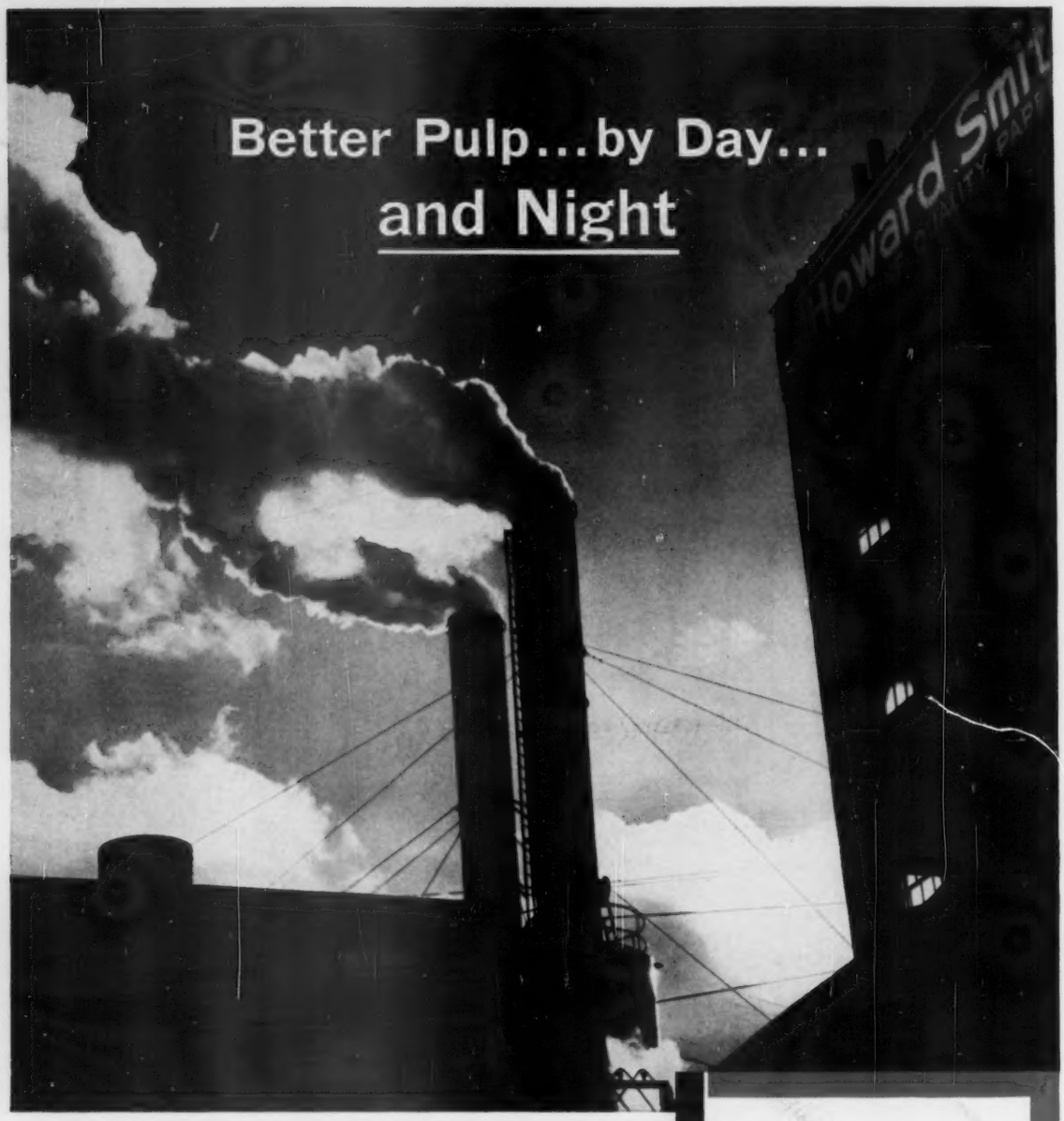
PAPER DIVISION
DOMINION ENGINEERING
COMPANY LIMITED
MONTREAL • TORONTO • WINNIPEG • VANCOUVER

1884
ANNIVERSARY
1959

J.J. & W.

YEARS in WOOD PULP

26 FARRINGDON STREET, LONDON, E.C.4
TELEX 23528 TELEPHONE: CENTRAL 7714 CABLES: 'WETTRE LONDON'
MANCHESTER EDINBURGH



Twenty-four hours a day, Howard Smith is beaver-busy producing new and superior pulps for the paper, boxboard and specialty paper industries.

Howard Smith, one of Canada's most progressive and forward looking companies, uses the most modern forest management methods known to insure a continuing supply of the best in pulp-making trees.

From the finest of raw materials, using the most modern equipment available, scientists, technologists and experienced craftsmen are working around the clock to produce the finest pulps for every need.

Howard Smith
PAPER MILLS LIMITED
PULP SALES DEPARTMENT
2300 Sun Life Building, Montreal 2, Canada

MANUFACTURERS IN CANADA OF HIGH QUALITY WOODPULPS

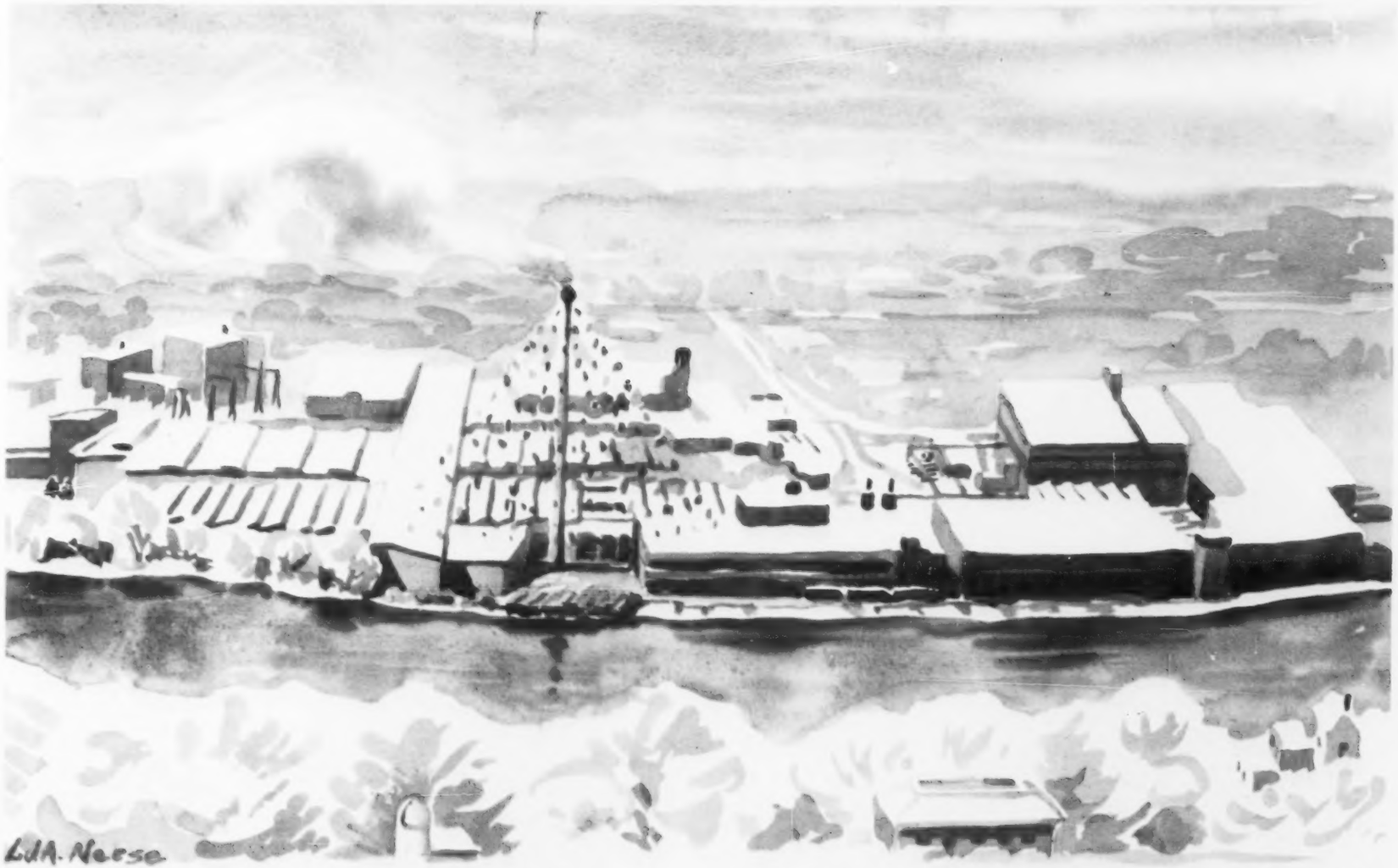
Progressive paper companies rely on these quality pulps:

SEAGULL
Bleached Soda Pulp

STORMONT
Bleached Sulphite

DONNACONA
Unbleached Sulphite

WINDSOR
Unbleached Kraft



WATER COLOR PAINTING BY L. J. A. NEESE, 1959

SNOW SCENE: Viewed from wintry skies, Beloit Iron Works sparkles and steams in the crisp Wisconsin air, its foundry flames leaping, its power-house stack trimmed with multicolored lights. The artist's aerial view, from high above the Beloit College campus, shows the plant's 17-acre site on the Rock River, at Beloit, Wisconsin. From here, since 1858, have come world-renowned Beloit paper machines.

Underwraps...

Fine gift wrappings that say "we care" are made with Glidden Zopaque® Titanium Dioxide

On any occasion when gifts are given, quality wrappings made with Glidden Zopaque lend added appeal to each package.

Zopaque is ideal for formulation of finest paper products, providing maximum whiteness and brightness and a high degree of opacity. It also enhances the appearance of colored and printed stock.

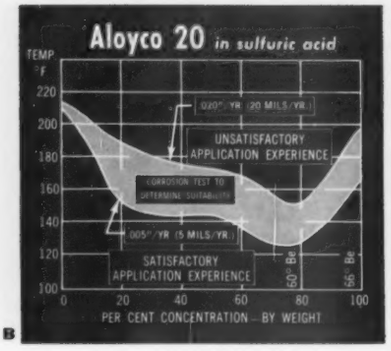
Write now for complete details about the various grades of Glidden Zopaque Titanium Dioxide specially developed for beater addition and coatings.

QUALITY Glidden PRODUCTS

FINEST PIGMENTS FOR INDUSTRY

The Glidden Company
Chemicals—Pigments—Metals Division
Baltimore 26, Maryland

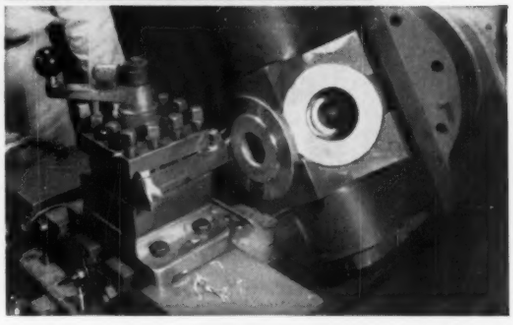
(This advertisement is printed on paper stock containing Glidden ZOPAQUE Titanium Dioxide.)



B

A

C


D

A. Your Problem in handling corrosives is discussed with a specialist when you sit down with an Aloyco Sales Engineer. He handles only one line, knows his business.

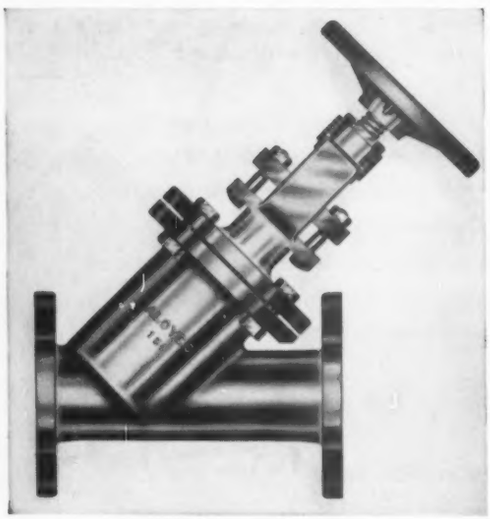
B. Right Alloy for your application is based on 29 years of specialized experience in the field plus continuing research in Aloyco metallurgical labs.

C. Valve Casting is made from Aloyco design in Aloyco foundry, only foundry ever built to produce pressure-tight Stainless Steel Valve castings, exclusively.

D. Special Techniques in machining stainless steel, plus most modern equipment in Aloyco plant assure you precise tolerances, trouble-free performance.

E. Aloyco Y Valve, shown here in various stages of production, is one of Aloyco's complete line of valve types, alloys, sizes, pressures — including nuclear valves.

BEHIND EVERY ALOYCO VALVE...


E

specialization

... to help you handle corrosives

Valves often look alike—even stainless steel valves. But they won't necessarily perform alike when you get them into the line.

Here are some of the special skills and facilities that make the difference between Aloyco valves and others. Some of the "extras" you get with Aloyco valves are staying power, minimum maintenance, trouble-free operation in severe as well as mild corrosive service. Doesn't it make sense that the one company specializing in the manufacture of Stainless Steel Valves exclusively is your best source of supply?

B.2

ALLOY STEEL PRODUCTS COMPANY

1316 West Elizabeth Avenue, Linden, New Jersey

This Pandia System

Proved Best for Neutral Sulphite Corrugating Pulps

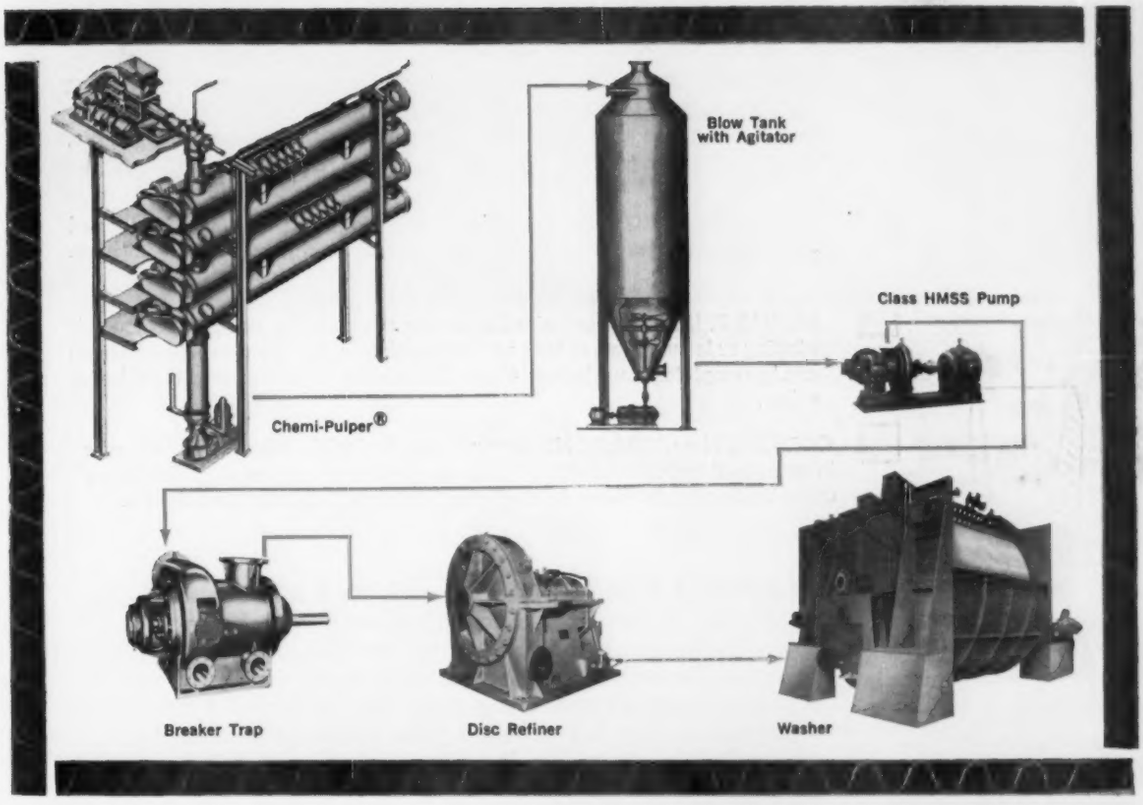
The name Pandia appears on more corrugating pulp digesters here and throughout the world than any other name.

That's because Pandia is the recognized leader in the development of equipment for neutral sulphite pulp. Pandia has the experience... supplies standard pulp mill equipment that has proved itself by producing results.

This highly regarded system begins with the Pandia Chemi-Pulper continuous digester and includes blow tank, agitators, pumps, the Breaker Trap, Refiner and Washer... all by Pandia.

Let us demonstrate the results you can obtain with the Chemi-Pulper in our commercial pilot plant. Write or call...

The Black-Clawson Company
Pandia Division, Hamilton, Ohio

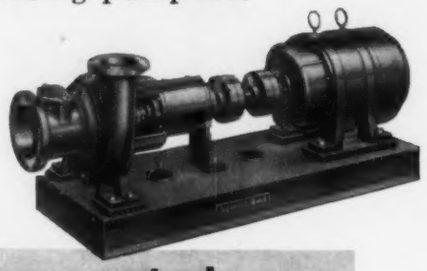


Co-ordineered Pulp Mill Equipment

BLACK-CLAWSON

What's your stock pumping problem?

- ☐ Clogging due to high consistencies
- ☐ Vapor-binding due to entrained air
- ☐ Losing prime
- ☐ Corrosion or abrasion reducing pump life



Here's the answer:

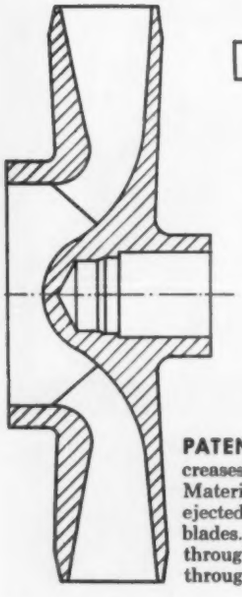
The IR Ingersoll-Rand All-Purpose stock pump

☐ **CLOGGING?** With its patented *diverging* impeller (see illustration), the I-R All-Purpose pump efficiently handles stock at consistencies as high as 10 percent! This means increased stock chest capacities, reduced bleaching costs, savings in mill water.

☐ **VAPOR BINDING?** Foamy solutions containing large amounts of entrained air or gas can be pumped continuously...with the exclusive diverging impeller.

☐ **LOSING PRIME?** Treated, sized or foamy stock can be pumped without air binding or losing prime as long as flow is maintained to the pump. Stock chests can be completely emptied and the suction piping exposed to air without losing prime.

☐ **CORROSION or ABRASION?** Lower internal velocities with gradual changes in cross-sectional area results in longer service life when pumping abrasive or corrosive liquids. Available in a wide variety of materials for most liquids.



PATENTED DIVERGING IMPELLER increases in width from center to periphery. Material cannot enter fast enough to replace ejected material, and vacuum forms between blades. Entrained air can't bind as it passes through the vacuum. Solids and slurries go through without abrupt acceleration.

As an added feature on the Ingersoll-Rand All-Purpose stock pump, the patented diverging impeller is *interchangeable* with the conventional type impeller. You can switch this pump from normal to heaviest stock service *simply by switching impellers and casing rings.* Ask your local I-R representative for full details on the All-Purpose stock pump; there's nothing like it on the market!

Ingersoll-Rand

10-633 11 Broadway, New York 4, N.Y.

PUMPS • COMPRESSORS • DIESEL ENGINES • AIR & ELECTRIC TOOLS • TURBO BLOWERS • CONDENSERS

The Labors of Hercules

Better Papermaking Chemicals
Better Technical Assistance

***Mythology**—Of all twelve labors that Hercules was called on to perform to secure his reputation for strength in Greek mythology, one of the most pleasant was probably the securing of Hippolyte's magnificent Girdle. The King of Argos sent Hercules to take it from Hippolyte, the Queen of the Amazons. Despite the interference of the Goddess Juno, Hercules added another victory to his record during the encounter.*

***Today, trained men to help you**—*More than a half century of experience in the manufacture of quality chemicals for the paper industry has earned Hercules a reputation as a leader in technology. To place this information at your disposal and to assist in the solution of your own specific problems, Hercules maintains a staff of more than 60 trained sales and service representatives. These men and their backgrounds are summarized in a new Hercules booklet. If you haven't received your copy, just write to Hercules. These men are always available to labor in your behalf.

PP59-7

Paper Makers Chemical Department

HERCULES POWDER COMPANY INCORPORATED

Wilmington 99, Delaware

Make MANCHESTER Your Headquarters for Suction Rolls

Look at these REPEAT USERS!

American Writing Paper Corporation • Armstrong Cork Company • Celotex Corporation • Champion Paper & Fibre Company • Container Corporation of America • Crocker Burbank Company • Federal Paper Board Company, Inc. • Fibreboard Paper Products Company • Mead Corporation • Oxford Paper Company • Scott Paper Company • West Virginia Pulp & Paper Company—And More Than 100 Other Satisfied Mills.

Suction couch roll—36" x 156".

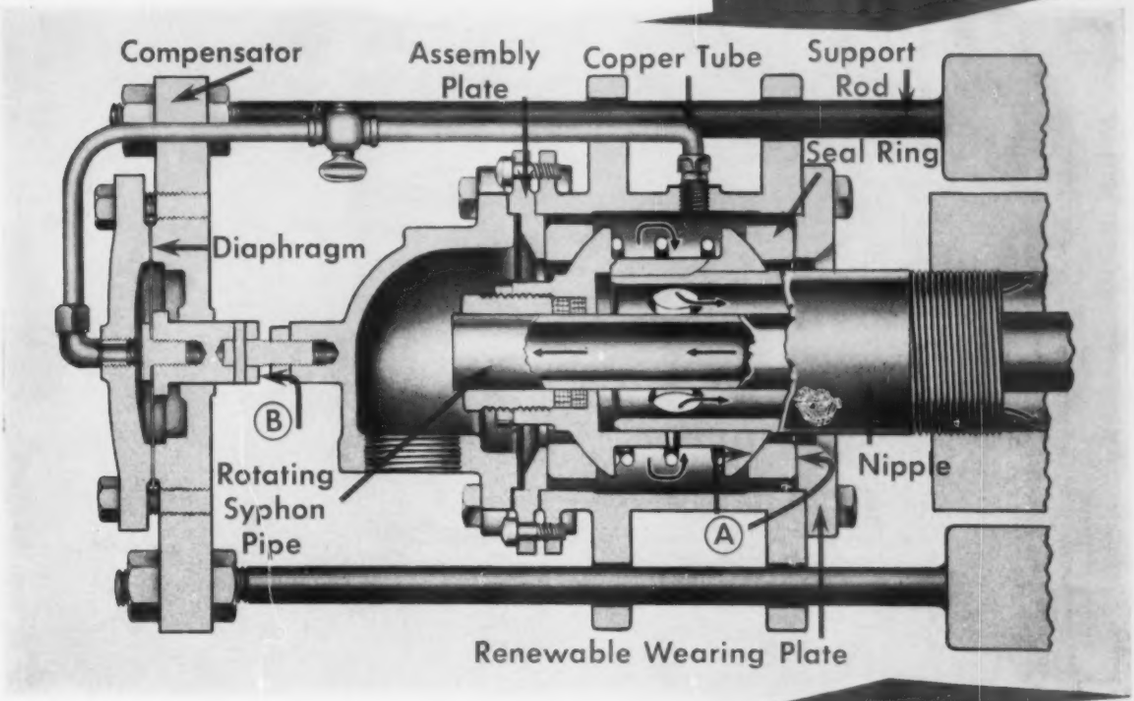
Specialists in designing and Building Paper Mill Machinery

THE Manchester MACHINE COMPANY

MIDDLETOWN, OHIO

ROTARY JOINT for VACUUM SERVICE...

Another reason why JOHNSON JOINTS are first in the Paper Industry



This one wasn't easy—a rotary *pressure* joint for *vacuum* service. It is used principally on the wet end section of some paper machines.

A modification of the Johnson Compensator does the trick. It exerts force by means of pressure against one side of a diaphragm, or vacuum against the other side. Mounted as shown, with vacuum in the joint transmitted to the Compensator, it produces a force at B which results in just enough pressure at A to maintain a tight seal. It works equally well under high or low vacuum conditions—maintains a constant sealing pressure regardless of any fluctuations.

This Type L-N rotary joint, designed to accommodate a rotating syphon pipe, functions just as it would in normal pressure service. The seal between rotating assembly and stationary housing is accomplished without any packing. No lubrication or adjustment is needed. The support rods carry all the weight of body and connections—permit the rotating assembly to "float" freely inside. Special assembly plate provides easy access to syphon pipe without disassembling the joint.

Type L-N JOHNSON JOINT with COMPENSATOR ...for vacuum service

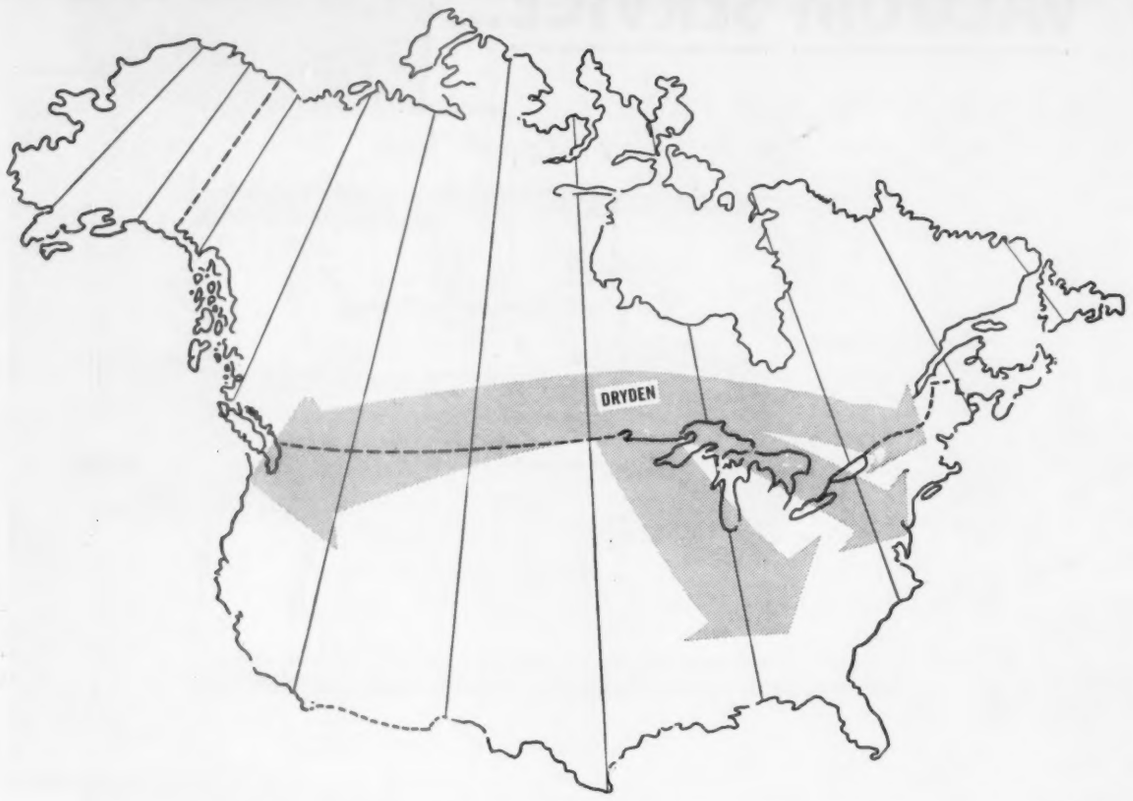
Here you have fresh evidence that Johnson can furnish types and sizes of rotary joints for all operating conditions. Johnson started the idea in the first place, is far ahead in know-how. For complete information on the Type L-N Johnson Joint and the Compensator write for copy of Bulletin N-2002.

THE JOHNSON CORPORATION

849 WOOD STREET • THREE RIVERS, MICHIGAN

Rotary Pressure Joints • Direct Operated Solenoid Valves

DRYDEN'S LOCATION ASSURES FAST DELIVERY



Dryden has long been known for its efficient Traffic Department...always ready to ship on a few hours' notice. And the shipments get to our customers in record time, because of Dryden's strategic location and proximity to major rail, highway and water routes.

A glance at the map makes it obvious why Dryden can and does make 4-6 day deliveries to the Midwest. But did you know that we also can give the same kind of service to our customers in Eastern United States and Canada? Dryden maintains inventories in boxcars, ready to go at a moment's notice.

Ask your laboratory to compare Dryden Bleached Sulphate with the best quality pulp you know. You, too, will say that it deserves all the endorsements—*and production testimonials*—it now enjoys. Order a trial shipment today. You will be amazed at how quickly you receive it.

DRYDEN PAPER COMPANY, LIMITED

DRYDEN, ONTARIO, CANADA

SOLD BY: **Anglo Paper Products, Ltd.**

2055 Peel Street, Montreal 2, Quebec

SALES REPRESENTATIVES IN THE UNITED STATES:

Northeastern Paper Sales, Inc.

400 Madison Avenue, New York 17, N. Y.
20 North Wacker Drive, Chicago 6, Ill.

Stainless Steel mesh triples life of cylinder wires of paperboard machines

AT CHAMPION PAPER AND FIBRE CO., CANTON, N. C.

United States Steel Corporation—Pittsburgh
American Steel & Wire—Cleveland
National Tube—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

USS

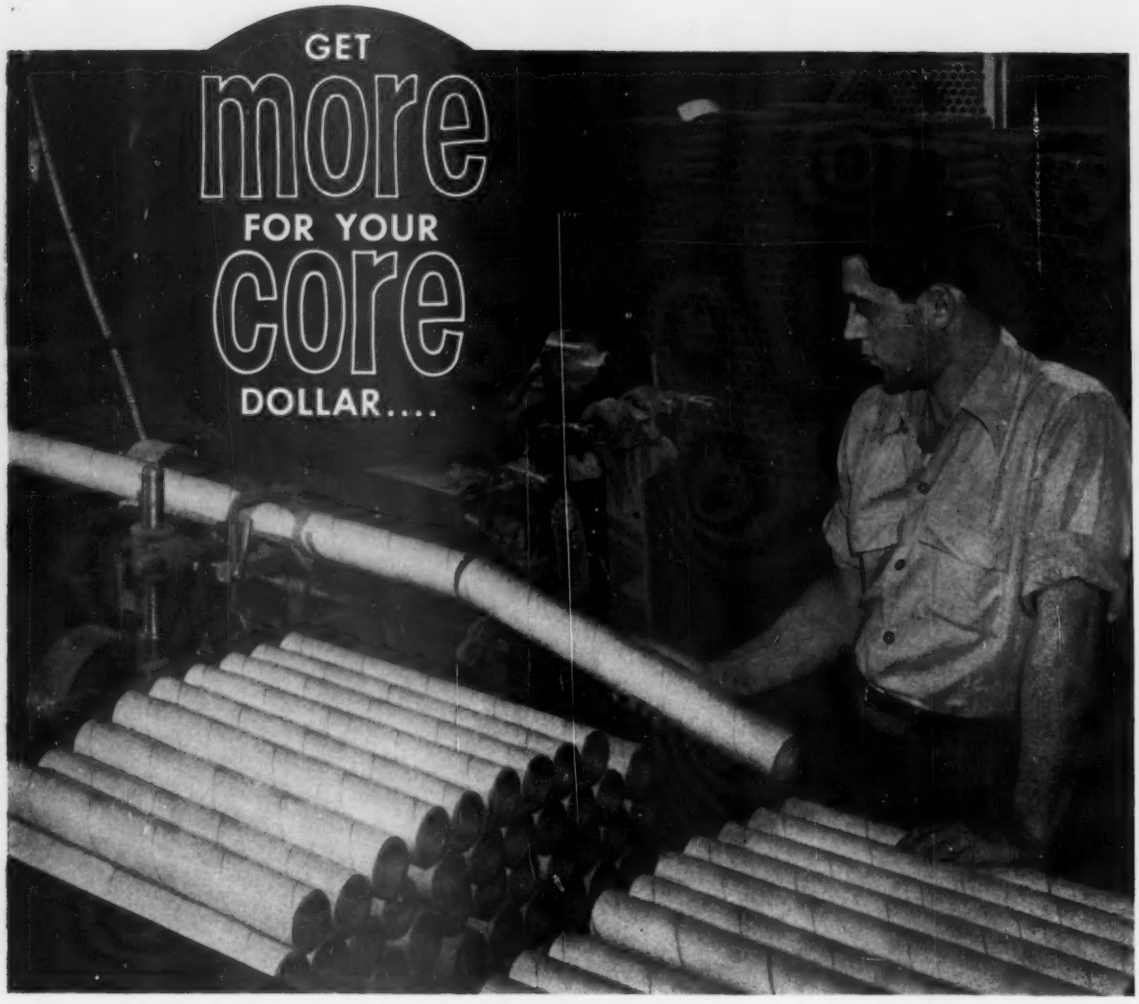
In 1951, Champion's Carolina mill installed Type 316 Stainless Steel mesh on the cylinders of their paperboard machines. These cylinders turn in 0.7% consistency pulp solution as the mesh picks up pulp and deposits it in layers on a felt where it is formed into a sheet of paperboard.

During operation, the mesh is constantly turned in the chlorinated bleached stock pulp solution. This action corroded and weakened the metal previously used for this mesh, making it necessary to replace the corroded mesh every 18 months.

The new Stainless Steel mesh lasts four to five years, and because the Stainless Steel resists corrosion and retains its strength, it reduces maintenance. Reduced maintenance means increased operating time and production.

Don't let corrosion hamper your production. Build and repair with Stainless Steel. USS Stainless Steel is available from your U. S. Steel representative or your local Steel Service Center.

USS is a registered trademark



Sonoco controls quality from start to finish!

All Sonoco cores are products of a completely integrated manufacturing operation. Every production step is subject to rigid quality control. This assures economical cores of uniform quality —for dependable, trouble-free performance.

Regardless of your need in cores—returnable or non-returnable, with or without metal ends—Sonoco offers you a complete range of sizes with tolerances and crush strength to meet your most demanding requirements.

Let Sonoco's 60 years of experience, coupled with a program of unending research, help you to get more for your core dollar. Core specialists are located at Sonoco plants from coast to coast to personally assist you with your problems. Call or write today!

SONOCO

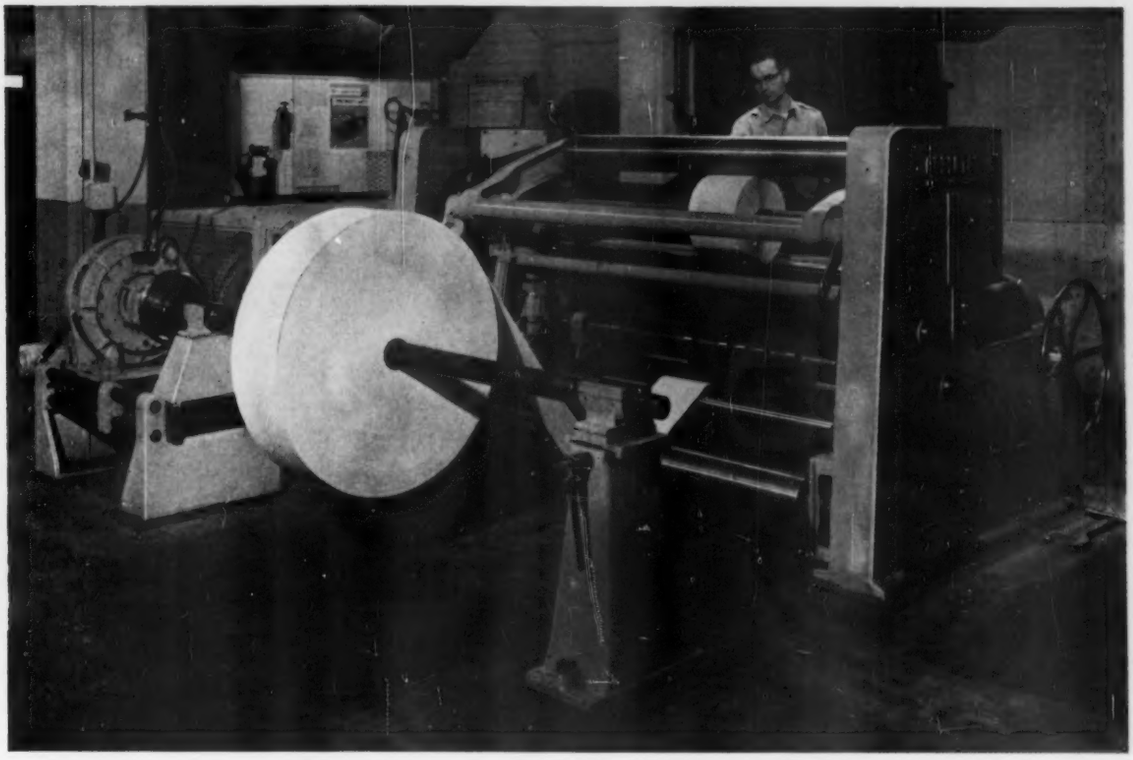
Paper Mill Cores

SONOCO PRODUCTS COMPANY 559

Main Office—HARTSVILLE, S. C. • MYSTIC, CONN. • AKRON, IND. • LOWELL, MASS. • PHILLIPSBURG, N. J. • LONGVIEW, TEXAS • PHILADELPHIA, PA. • FREMONT, CAL. LA PUENTE, CAL. • ATLANTA, GA. • GRANBY, QUEBEC • BRANTFORD, ONTARIO • MEXICO, D. F.

"Our newest rewinder," says Wausau PAPER MILLS

"doesn't just 'happen' to be an Appleton."



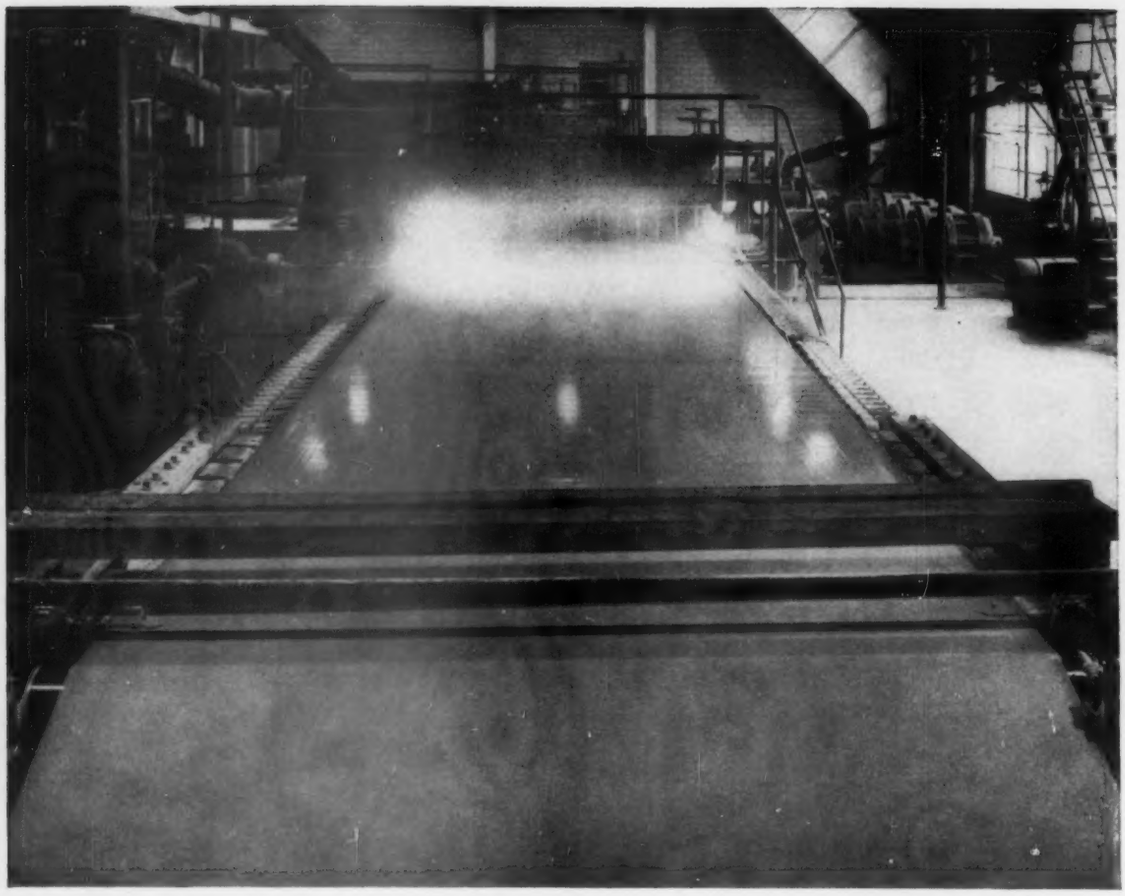
"The fact is, we don't own *any* 'just happen to have' equipment. We're probably what's known as 'tough' customers because we long ago discovered that 'second best' usually means 'third rate.' We're not selling anybody's machinery . . . and we're not buying just anybody's either. If we have it, we've *convinced ourselves* it's the best available . . . and both our paper and prices seem to bear this out."

There's not much for us to say except perhaps that the Appleton rewinder illustrated above is the fourth major piece of equipment that Wausau has purchased from us. It's shown here *profitably* salvaging an 8½" roll. Many mills use Appleton rewinders interchangeably for both culling and production.

The specifics on this machine will be sent promptly upon request. Please indicate if you have any special rewinder problems.

APPLETON MACHINE COMPANY

APPLETON, WISCONSIN



A Complete Starch Line... *tailor-made to your needs*

Today's complex papermaking operations require a wide range of starches—starches specifically designed to do a particular job. You'll find that the complete starch line offered by Corn Products Company includes types for every phase of modern papermaking. These starches are available in so many varieties that *they can literally be tailor-made to suit individual requirements* and production problems of individual plants!

For example, in beater sizing, preferred starches for improved surface qualities plus excellent bursting and tensile strength, include the many varieties of Globe and pre-cooked Amijel. For calendar sizing, you'll find a complete line of Claro and Eagle starches, as well as Globe starches for enzyme conversion. In this operation, Globe and Excello dextrines and thin-boiling Foxhead starches are also used. For general coating, with good viscosity at high solids content, use Claro and new improved Ten-O-Film starches.

And the research staff of Corn Products Company, largest in the industry, is constantly at work developing new products to meet the changing needs of modern papermaking.

Our technical representatives are completely versed in the problems that arise with wet end additives. Their impressive field experience and continuing research into starch, evidenced by frequent publications in trade and technical journals*, is always at your service. Take full advantage of the facilities and experience of the world's largest corn processors—call our nearest sales office or write direct.

Fine products for the Paper Industry: GLOBE® • EAGLE® • FOXHEAD® • CLARO® • AMIJEL® CORAGUM® • TEN-O-FILM® starches • GLOBE® • EXCELLO® • LAM-O-DEX® dextrines and gums.

CORN PRODUCTS SALES COMPANY 17 BATTERY PLACE, NEW YORK 4, N.Y.

*A reprint on the results of corn starch usage is available on request from our New York office

APPLETON
WIRES
ARE
GOOD
WIRES

a leading
manufacturer
of wires
for
toweling
and
tissue

APPLETON WIRE WORKS CORP., PLANTS AT APPLETON, WIS. AND MONTGOMERY, ALA.: INTERNATIONAL WIRE WORKS, MENASHA, WIS. AN AFFILIATED COMPANY

A SKILLED HAND IN CHEMISTRY...AT WORK FOR YOU

SEEKING IMPROVED PAPERS?

NOPCO POINTS THE WAY

Nopco points the way to quality products in pulp and paper operations. Nopco offers a full line of paper chemicals, each specifically designed to yield better products . . . every time . . . with dependability you can count on.

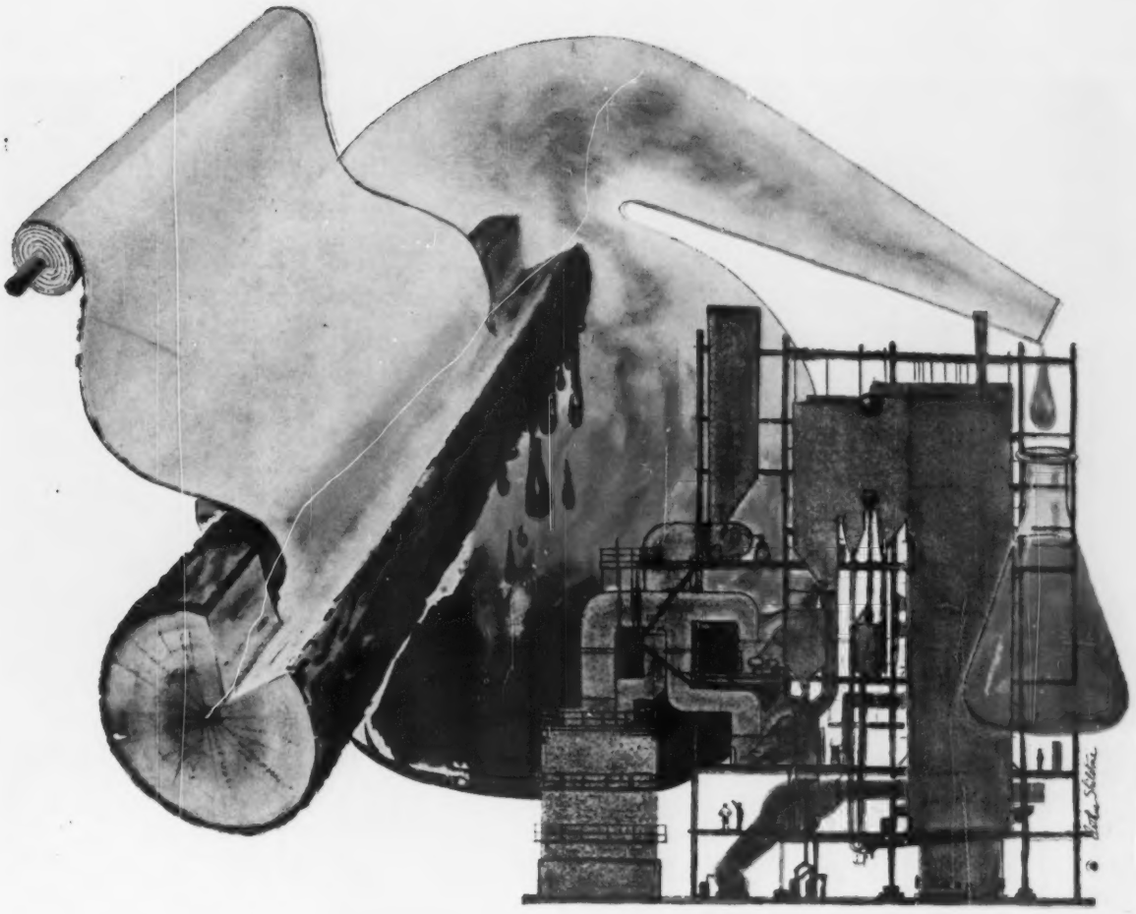
Perhaps the skilled hand of Nopco can go to work for you. Back of every chemical made by Nopco for the paper industry stands Nopco Technical Service—an experienced staff ready to assist with laboratory data and recommendations based upon your specific requirements.

DEFOAMERS	FELT WASHING DETERGENTS
WAX SIZES	CALENDER STACK LUBRICANTS
COATING ADDITIVES	ANTIBLOCKING AGENTS
PITCH DISPERSANTS	DEWAXING AGENTS
METALLIC SOAPS	POLYETHYLENE EMULSIONS
RAG COOKING SURFACTANTS	DE-INKING AGENTS

NOPCO CHEMICAL COMPANY
60 Park Place, Newark, N.J.

NOPCO®

Plants: Harrison, N.J. • Richmond, Calif. • Cedartown, Ga. • London, Canada



C-E Recovery Units save up to 640 carloads of pulping chemicals each day

One hundred eight million pounds per 24 hours is the aggregate dry solids capacity of C-E Chemical Recovery Units installed or on order. They can recover 45 million pounds of chemicals a day and, in the process, generate 380 million pounds of steam. These units dot an area as wide as the world and are to be found in Europe, Asia, Central and South America, Canada—and in 21 of of our 50 States. They range in capacity to 2,000,000 pounds of dry solids per 24 hours, have operating pressures as high as 1200 psi and deliver superheated steam at temperatures to 900 F.

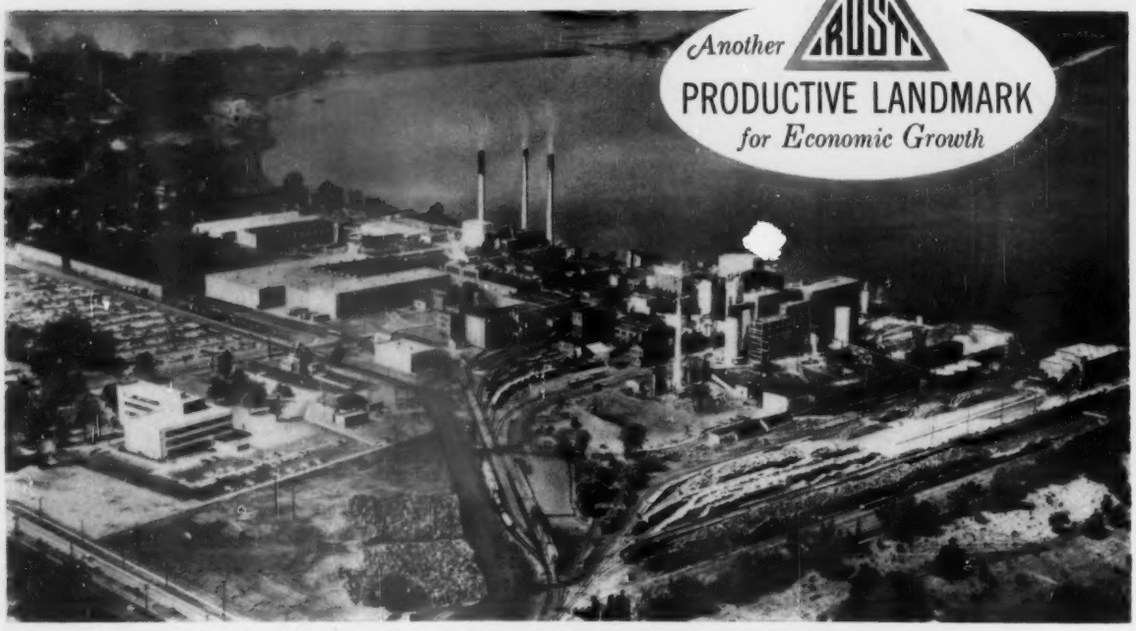
Today's C-E Chemical Recovery Units offer many features that are a result of advanced engineering, years of continuing research and development, and an awareness of the needs of the pulping industry. The self-cleaning panel-type superheater and screen—the tangential air system for complete and controlled combustion—the maintenance-free decanting hearth—the control systems for liquor density and temperature—all have been expertly blended into an integrated design to provide you with a degree of efficiency, economy, reliability and flexibility second to none.

COMBUSTION ENGINEERING

200 Madison Avenue, New York 16, N. Y. • CANADA: Combustion Engineering-Superheater Ltd.

C-225

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; NUCLEAR REACTORS; PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING SYSTEMS; PRESSURE VESSELS; SOIL PIPE



Hammermill Paper Company's $20,000,000 growth projects constructed by RUST

The present major growth program represents the most progressive period in the 60-year history of Hammermill Paper Company, Erie, Pa. The entire project, under Rust supervision, started several years ago and gained momentum after completion of a new Neutracel® pulp mill in 1955. This mill enables Hammermill to produce fine papers from hardwoods.

New administration building designed by Daniel, Mann, Johnson & Mendenhall, Los Angeles, Calif., and constructed by Rust.

The program, engineered and constructed by Rust, included the following: tripling the size of finishing room, addition to Neutracel building to house digester and pulp-washing equipment, new four-story sulfite pulp mill building, new administration building, new wood room for hardwood pulping operations and new boiler plant addition.

Rust has designed and constructed many 'productive landmarks' serving various industries. Construction specialties have played an important part in the growth of Rust Companies . . . steel plants, chimneys, soil compaction, refractory brickwork, and metallurgical furnaces.

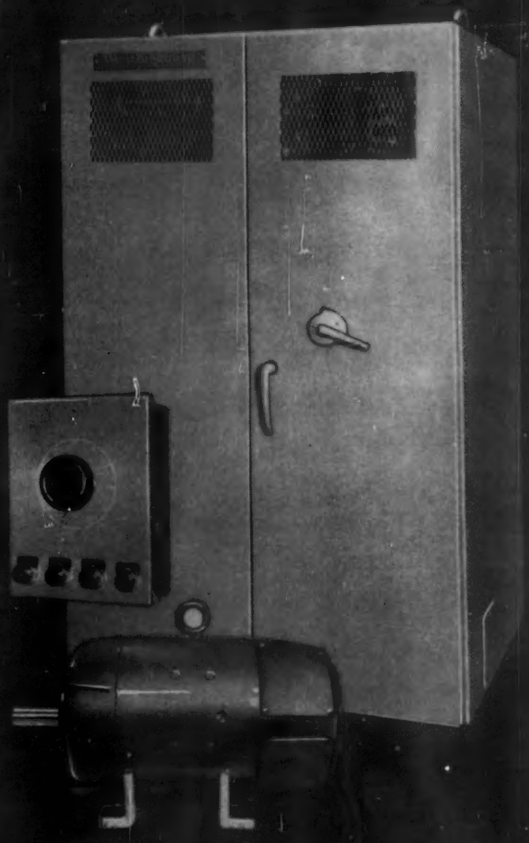
Your inquiry is invited.

THE RUST ENGINEERING COMPANY

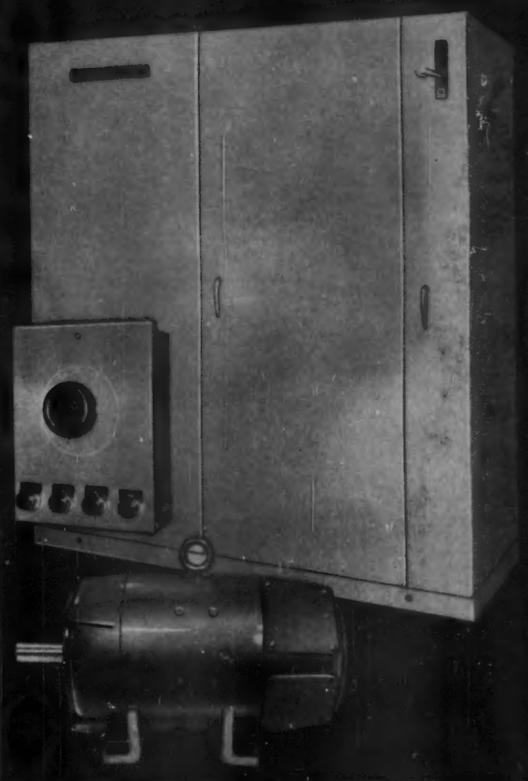
• 930 Fort Duquesne Boulevard, Pittsburgh 22, Pa.
• 2316 Fourth Avenue, North, Birmingham 3, Ala.

P-7

static-powered or motor-generator



Static-Powered model utilizes magnetic amplifier principle to replace conventional motor-generator set. There are no moving parts to weaken from wear. New forced-filtered air ventilation system reduces floor space required . . . simplifies installation.



Motor-Generator model, newly redesigned, features new cabinet, silicone-insulated d-c motor, new electronic regulators which simplify maintenance and positive-pressure ventilation for longer, trouble-free operating life.

WESTINGHOUSE HAS THE ADJUSTABLE-SPEED DRIVE YOU NEED!

When you need smooth, stepless adjustable speed, look to the complete line of new Westinghouse AV adjustable-speed drives . . . available in both static-powered and motor-generator models . . . whichever is best suited for your particular application.

Designed for use with motors 1 to 200 hp, Westinghouse AV adjustable-speed drives provide constant torque over an 8 to 1 speed range—10 to 1 with slight modification—and are also available with constant-hp speed ranges.

All Westinghouse AV adjustable-speed drives are completely pre-engineered, assembled and factory tested. Since all components used are service-proven Westinghouse products, you are assured of the benefits of sole responsibility from one single supplier.

Ask your nearby Westinghouse sales engineer to show you how and where new AV adjustable-speed drives can help you POWER-UP for profit and savings. Or, for complete product information, write Westinghouse Electric Corporation, 3 Gateway Center, Pittsburgh 19, Pennsylvania. J-22147

YOU CAN BE SURE... IF IT'S Westinghouse

WATCH WESTINGHOUSE LUCILLE BALL-DESI ARNAZ SHOWS CBS TV FRIDAYS

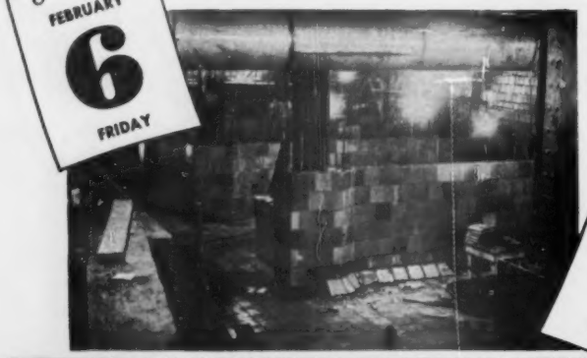
Chest out of Service

Preliminary Clearing Operations Begin

Only 8 DAYS

...Only STEBBINS has the Experience, Manpower and Facilities for this

EMERGENCY SERVICE



Installation Complete after 6 Days

Photos courtesy of Great Northern Paper Co., Millinocket, Maine

SCOPE OF WORK:
Line a 91' x 48' x 14'3" Chest
Install 4 SEMTILE® Midfeathers
Tile Encase 2 Steel Columns

MATERIALS INSTALLED:
14,000 SEMPLATE®
5,000 SEMTILE®
150 cu. yd. concrete floor fill
20,000 common brick
400 concrete block
3900 sq. ft. wire mesh

TIME SCHEDULE:
7 days for material delivery
6 days for tile installation
Chest out of service only 8 days
Only 2 weeks from concept to completion

ACKNOWLEDGEMENT:
This remarkable performance was made possible only by the extreme cooperation of the engineering and maintenance staff of the Great Northern Paper Company.

SINCE 1884
Specialists in Design Installation and Servicing of Linings and Tile Tanks

STEBBINS Engineering and Manufacturing Company

SEMCO

WATERTOWN, N. Y. • PENSACOLA, FLORIDA
STEBBINS ENGINEERING CORP. — TOWER BLDG., SEATTLE, WASH.
CANADIAN STEBBINS ENGINEERING & MANUFACTURING CO., LTD.
TOWN OF MOUNT ROYAL, MONTREAL 9 • MERCHANT EXCHANGE BLDG., VANCOUVER

Forester shoots cutting from a superior tree for use in grafting

Buckeye always aims high

Improvement is our goal . . . in forest, laboratory and mill

Today's best is not good enough for tomorrow at Buckeye. As a market pulp producer, our future is based on continued leadership in pulp improvement.

Throughout the Buckeye organization you see men dedicated to the development of pulps for the years to come. They are the research foresters seeking faster growing trees with special pulp characteristics. They are the chemists engaged in basic research for product improvement. They are the engineers setting up new and improved manufacturing processes.

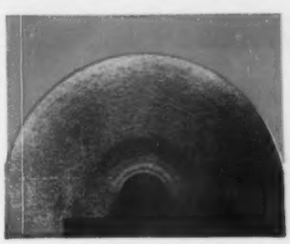
For a dependable source of prime kraft, today and tomorrow, look to Buckeye . . . producer of outstanding pulps for the paper industry.

BUCKEYE
CELLULOSE CORPORATION
Memphis 8, Tenn.

Wood pulp plant at Foley, Florida
Cotton linters plant at Memphis

BUCKEYE PULP

Bleached and Semi-Bleached
Kraft from Southern Pine



Huyck Field Service Engineers, teamed with Papermakers, using Electronic Draw Speed Indicator to measure speeds of two draws simultaneously.

HUYCK FELTS

Huyck Felt Co.,
Rensselaer, N. Y.;
Aliceville, Ala.;
Division of F. C. Huyck & Sons.
In Canada: Kenwood Mills Ltd.,
Arnprior, Ontario.

TYPICAL MACHINE PROBLEMS SOLVED BY NEW ELECTRONIC DRAW SPEED INDICATOR

MILL NO. 1.

PROBLEM: A cylinder machine running white patent coated board caused scuff marks to appear on top side of sheet.

SOLUTION: The Electronic Draw Speed Indicator detected slippage between top and bottom felts. Result: the mill superintendent was authorized to install helper drives on top press rolls.

MILL NO. 2.

PROBLEM: A high-speed yankee machine running wet crepe caused pick-up felts to stretch and wear out prematurely.

SOLUTION: The Electronic Draw Speed Indicator showed a slippage of 40 f.p.m. between the wire and pick-up felt. The answer: a helper drive was installed to redistribute the load.

MILL NO. 3.

PROBLEM: A cylinder machine running white patent coated board caused bottom felts to tear.

SOLUTION: The Electronic Draw Speed Indicator showed that drives were fluctuating to change draw speeds as much as 0.6% causing impact loads on the bottom felt. The approach: a thorough investigation is being made of the drive.

ANOTHER HUYCK EXCLUSIVE...

A New Electronic Tool

that provides a quick...accurate analysis of machine problems

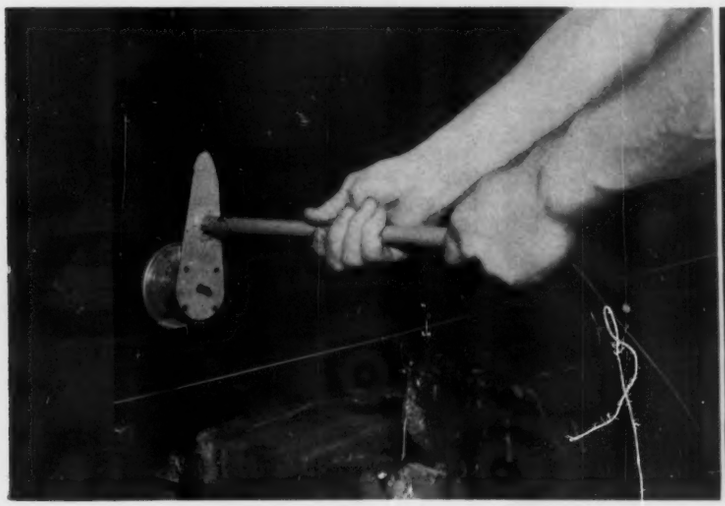
Latest of the new-day ideas introduced by Huyck for the betterment of papermaking is the revolutionary Electronic Draw Speed Indicator that provides quick...accurate answers to hard-to-solve machine problems.

The Electronic Draw Speed Indicator enables Huyck Field Service Engineers to measure *precisely and simultaneously* the speeds of various machine components. Felt and paper draw speeds are checked with utmost precision. Machine drives are more closely adjusted to avoid surging or discontinuous loads. Slippage is quickly pinpointed whether it occurs between two felts, felt and wire, or felts and rolls.

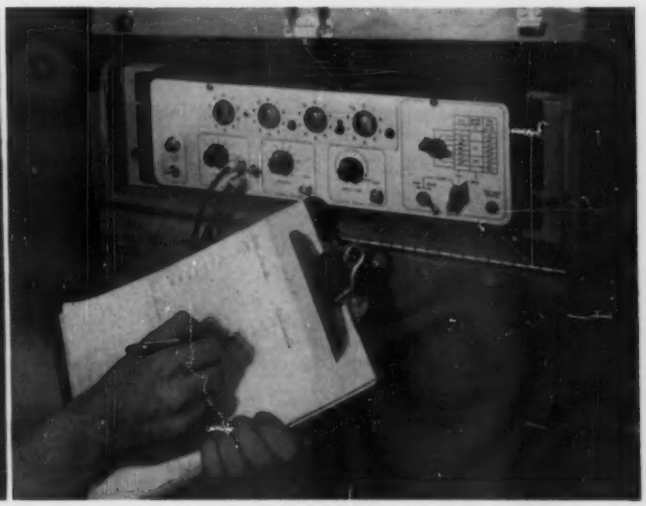
Most important of all the benefits arising from this newest of Huyck's *plus services* to papermakers is that coupled with new Huyck felts it paves the way to more efficient machine operation. The result: better production of better paper at lower felt cost per ton. Your Huyck Sales and Field Service Engineers will be glad to tell you more about it.

NEW HUYCK FELTS ☆ INDUSTRIAL FABRICS

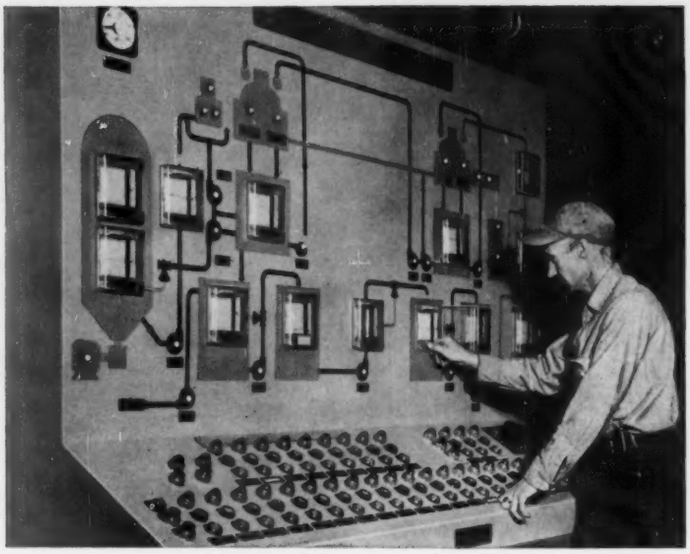
FIRST IN QUALITY • FIRST IN SERVICE SINCE 1870



Close-up of transducer and wheel measuring draw speed.



Huyck Field Service Engineer recording draw speed readings.



HONEYWELL GRAPHIC PANEL controls the Dorr-Oliver washing system. The new mill was built for $7,000,000.

Honeywell controls help reduce cost of new Waldorf-Hoerner Paper Products Co. mill

With closely-knit, complete mill instrumentation, this revolutionary new pulp mill at Missoula, Montana, produces 250 tons of bleachable-grade kraft pulp per day, with a surprisingly small work force.

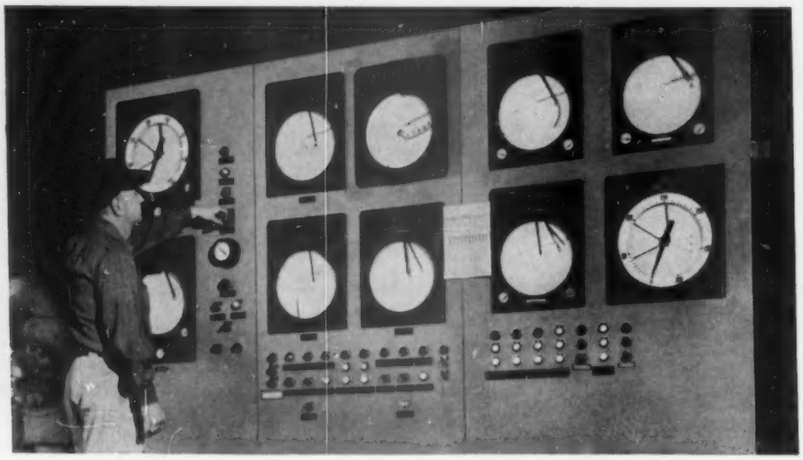
The brain child of Nels H. Sandberg, president of the Montana company, the entire mill features many processing innovations for efficient, profitable operation through automatic control.

This is another example of how mill instrumentation, complete from concept to startup, pays daily dividends. Your nearby Honeywell field engineer can show you how to gain the advantages of instrumentation in your own mill. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

Honeywell

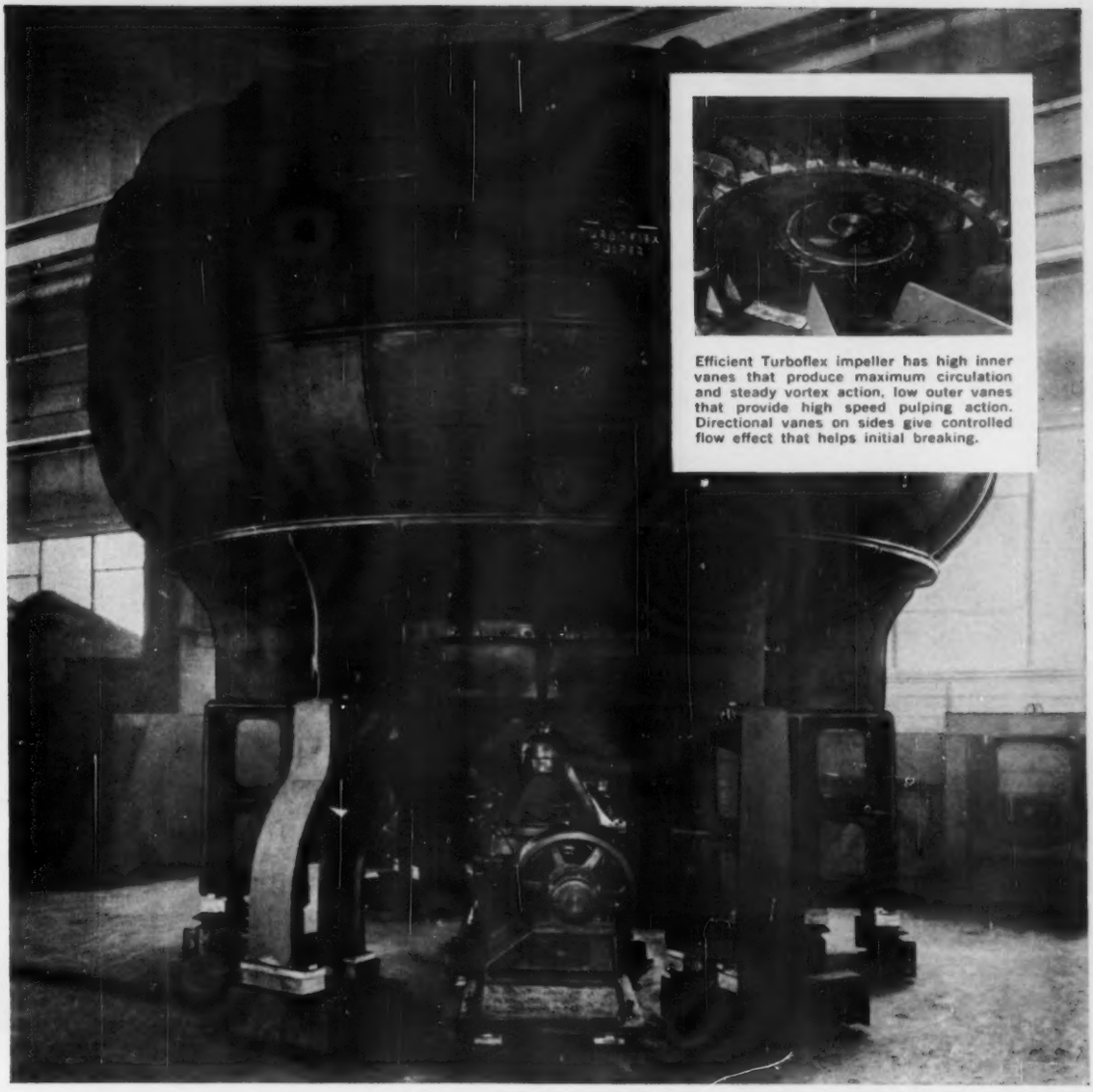
H HONEYWELL *First in Control*



HONEYWELL RECORDERS AND CONTROLLERS operate the digesters. The mill plans to produce 500 tons of pulp a day in 1960.

For more efficient waste paper pulping

Take a look at Turboflex



Efficient Turboflex impeller has high inner vanes that produce maximum circulation and steady vortex action, low outer vanes that provide high speed pulping action. Directional vanes on sides give controlled flow effect that helps initial breaking.

Proven in Canada by Fleck – Now built in the U.S. by Jones

With more than two decades of experience in Canadian and European mills the Fleck Turboflex pulper has earned recognition as the finest equipment of its kind available anywhere. To provide American mills with the same top efficiency in waste paper pulping, Turboflex units of all sizes are now also being built in the U.S. by Jones.

Some of the features you will prefer in Turboflex include: *curved tops* to prevent serious splashing; *specially designed impellers* for more effective defiberizing; *disc type dump valves*, instead of slide, for faster discharge; *replaceable wearing* parts for faster, lower cost maintenance.

For complete details on Turboflex write to E. D. Jones Corporation, Pittsfield, Mass.

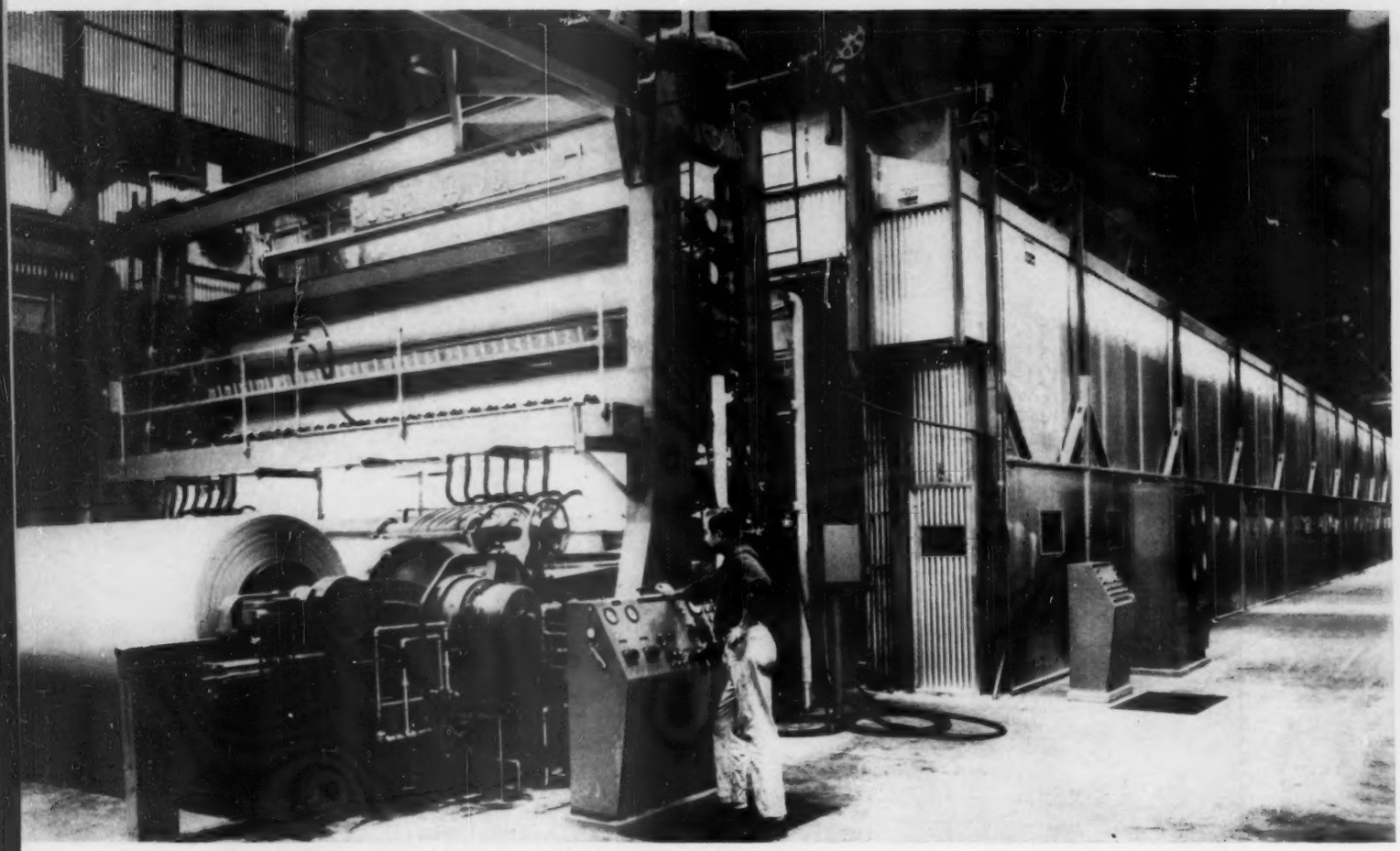
E. D. JONES CORP. PITTSFIELD, MASS. member BELOIT group

Jones

PULP MILL EQUIPMENT AND STOCK PREPARATION MACHINERY

GE PRODUCTS SYSTEM ENGINEERED VALUE IN USE

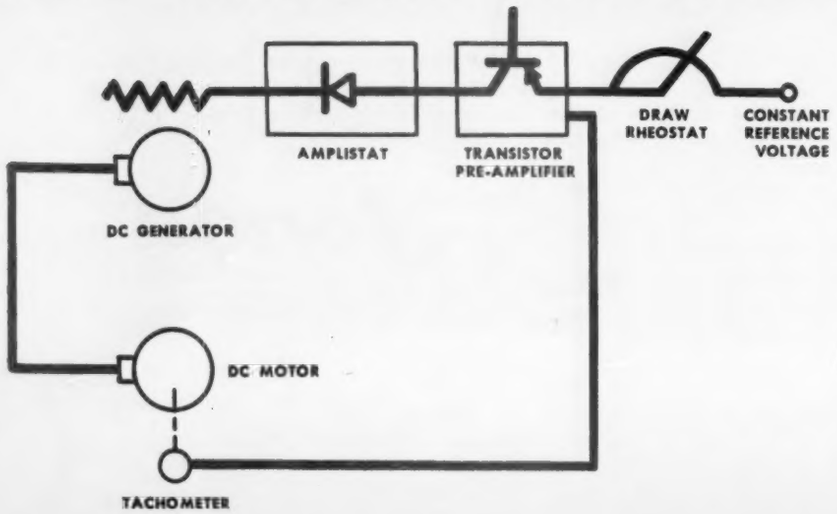
Southland Paper



Designed for newsprint production at 2500 FPM, Southland's new No. 4 paper machine was built by Pusey and Jones Corporation, powered by a General Electric multiple-generator sectional drive. The new machine, 270 inches in width, uses 14 G-E drive motors totalling more than 3000 horsepower.

GENERAL ELECTRIC DRIVES ARE SYSTEM ENGINEERED

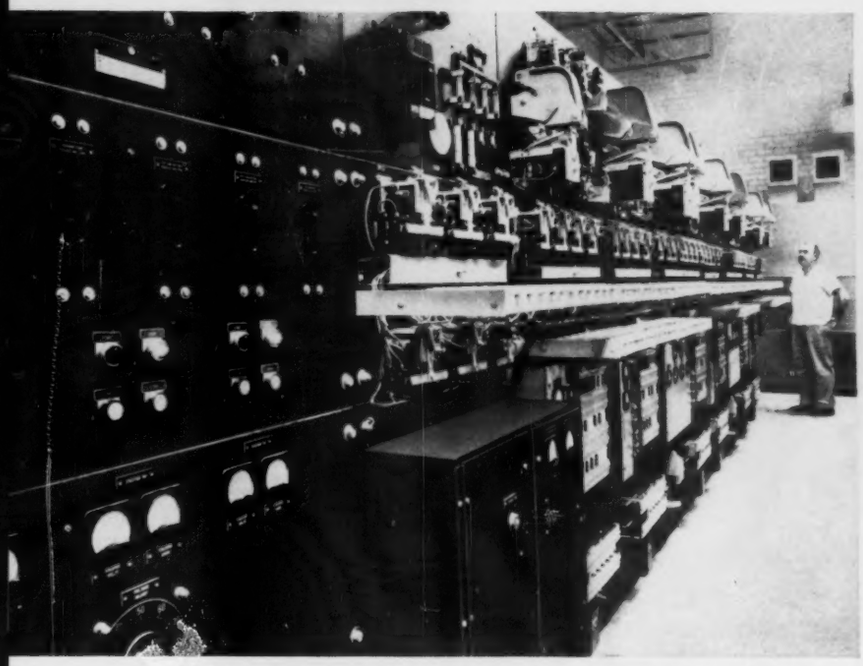
How the G-E Multiple-Generator System Works . . .



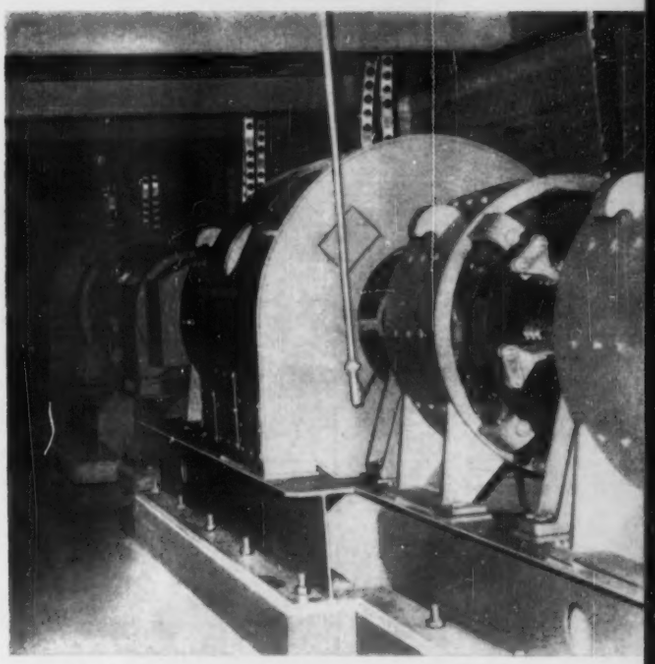
Each section motor operates on generator voltage control. The motor speed is measured by a tachometer, whose output voltage is compared with the over-all machine's constant reference voltage. With even the slightest difference between the two voltages, the transistorized pre-amplifier responds instantly through an amplistat regulator to change the generator voltage, maintaining the exact desired motor speed.

specified General Electric Drive featuring new transistor amplistat

HERE'S WHY . . . •Improves machine availability
•Maximum machine flexibility
•Reduces electrical maintenance



General Electric static speed regulator provides high accuracy, fast response control. **Amplistat power amplifier** and completely sealed transistor pre-amplifier give **long-life, trouble-free operation** and reduce costly unscheduled downtime.



Dependable power is supplied by two G-E MG sets, each driven by a 1500 hp synchronous motor. Separate generator for each section adds flexibility, simplifies operation and maintenance.

FOR ALL PAPER MAKING APPLICATIONS

Southland Paper Mills' new No. 4 paper machine at their Lufkin, Texas mill, powered by a General Electric multiple-generator sectional drive, presents a major advance in drive systems for the paper industry.

New technology, such as use of transistors and magnetic amplifiers in the G-E static speed control, provides trouble-free, reliable operation to increase machine availability and reduce maintenance time and expense. Result: *greater output.*

Co-ordination of the equipment into a flexible, easy-to-expand electrical system resulted from close co-operation between Southland engineers and General Electric application and service engineers.

General Electric engineering services also can help you design, equip and install a well-integrated electrical system suited to your specific needs. For more information on paper-mill drives, call your nearest General Electric Apparatus Sales Office or write to General Electric Co., Section 655-23, Schenectady 5, N. Y.

SYSTEM ENGINEERED DRIVES FOR PAPER INDUSTRY

GENERAL ELECTRIC

Manufacturers of

Westvaco Bleached Sulphate Woodpulp

Westvaco Semi-Bleached Sulphate Woodpulp

Westvaco Prime Unbleached Sulphate Woodpulp

Westvaco Standard Unbleached Sulphate Woodpulp

WOODPULP AND EXPORT
SALES DIVISION
230 Park Avenue
New York 17, New York, U. S. A.

Blackfriars House
19 New Bridge Street
London, E.C. 4, U.K.

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Vedado, Habana
Cuba

Bingham "EVEN-FLO" PUMP

DISCHARGES WITH NON-PULSATING FLOW REGARDLESS OF VARIATION IN SUPPLY!

- Cannot Become Airbound!
- Operates with Little or No Submergence
- Maintains Constant Liquid Level with Varying Supply

BINGHAM "EVEN-FLO" PUMPS are being used effectively in the Pulp and Paper Industry for such services as: *Primary and Secondary Screen Transfer • Seal Pits for Barometric Legs • White Water and Stock Chests • Mill Sewage and Waste Liquor Sumps • Sludge Collecting Chests • Acid Sumps • Fan Pumps • Washers • Save-Alls.*

Three Bingham "Even-Flo" Pumps with total combined capacity of 100,000 GPM.

The BINGHAM "Even-Flo" Pump discharges pumpage with an even, non-pulsating flow, regardless of whether it is pumping at full or fraction of capacity. The evenness of discharge is not affected by surges in supply to pump sump. Maintains constant liquid level in the pump sump, regardless of variation in incoming supply.

The "Even-Flo" pump also handles liquids containing entrained air at the same uninterrupted, even rate of flow, without becoming airbound.

Available in a wide range of capacities. Call your nearest Bingham office for full information, or write for Bulletin 36.

Bingham SINCE 1921 — DOUBLE VOLUTE PUMPS — RADIAL BALANCE

BINGHAM PUMP COMPANY
General Offices: 2800 N. W. Front Avenue, Portland 10, Oregon
Factories: Portland, Ore. • Vancouver, B. C., Canada

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NEW ORLEANS, LA.	TORONTO, ONT., CAN.
VANCOUVER, B. C., CAN.	

BOWATERS HIGH SPEED REWINDERS RUN NEWSPRINT AT SPEEDS APPROACHING 6000 F.P.M.

One Reliance Driven Beloit Rewinder keeps pace with each of the 2200 fpm. newsprint machines at Calhoun, Tennessee. Plus performance from Reliance V★S Drives help two rewinders do the job . . . most mills need three.

These two Bowaters Southern Paper Corporation rewinders were designed to operate at 5000 fpm. Today Bowaters is rewinding at speeds close to 6000 fpm., *a 20% increase over designed capacity*. This extra performance is typical of Reliance Products.

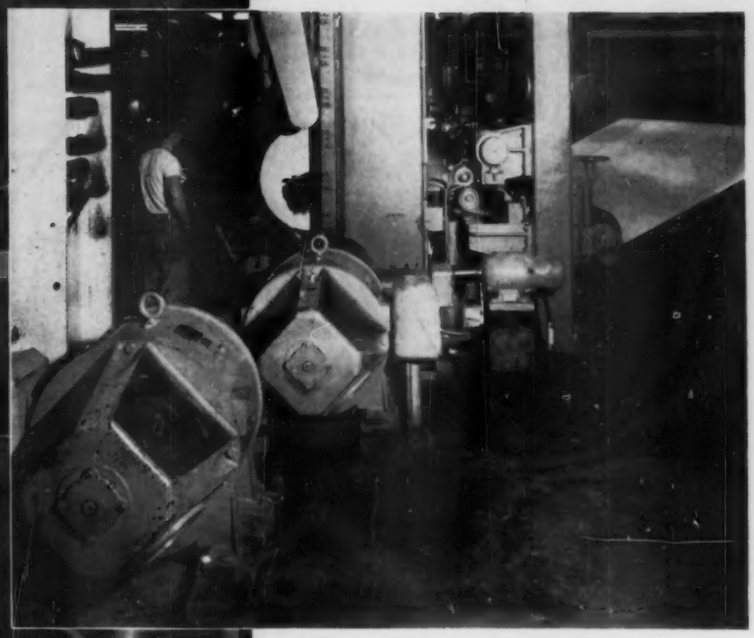
For complete details on this application write for Bulletin L-2506.

RELIANCE ELECTRIC AND ENGINEERING CO.

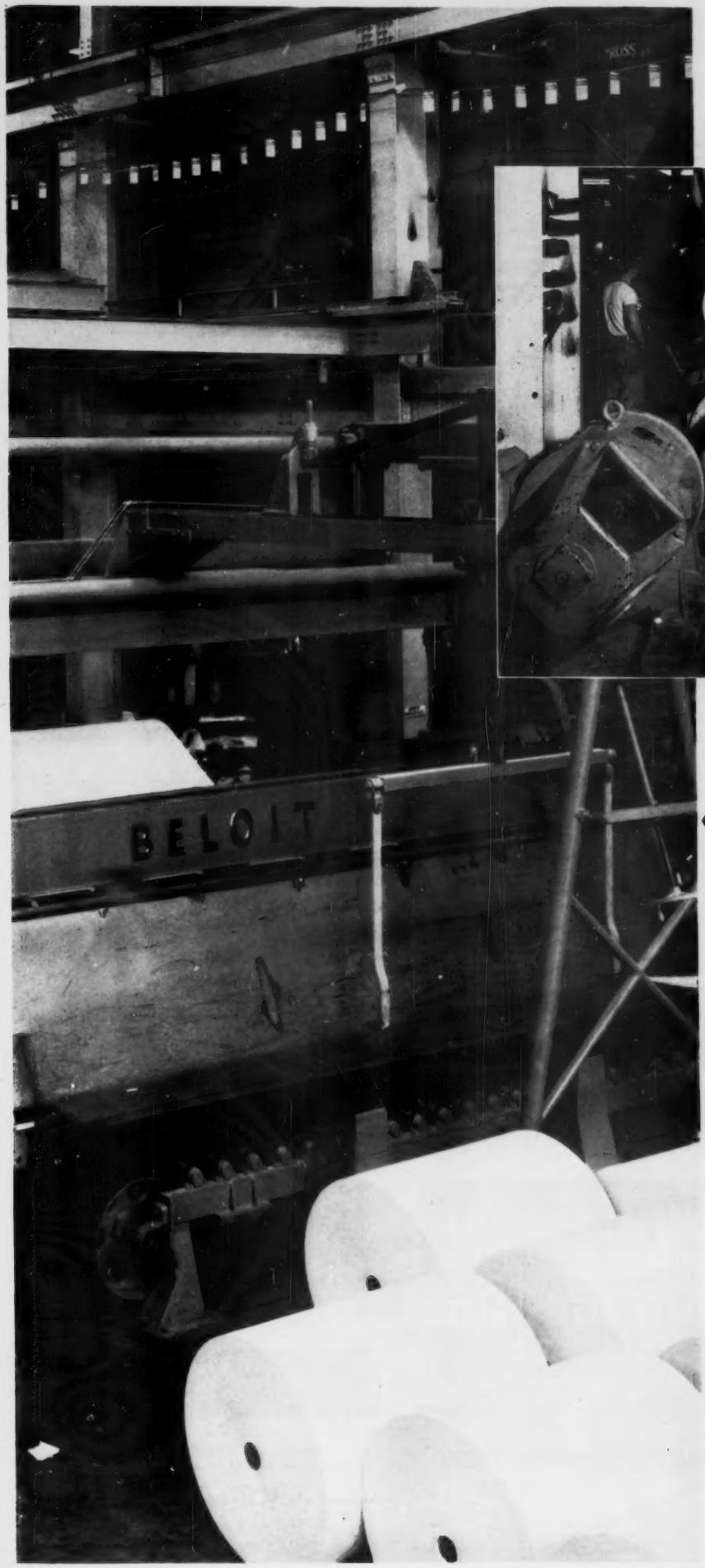
Dept. 188A, Cleveland 17, Ohio • Canadian Division: Toronto, Ont.

Sales Offices and Distributors in Principal Cities

A-1568

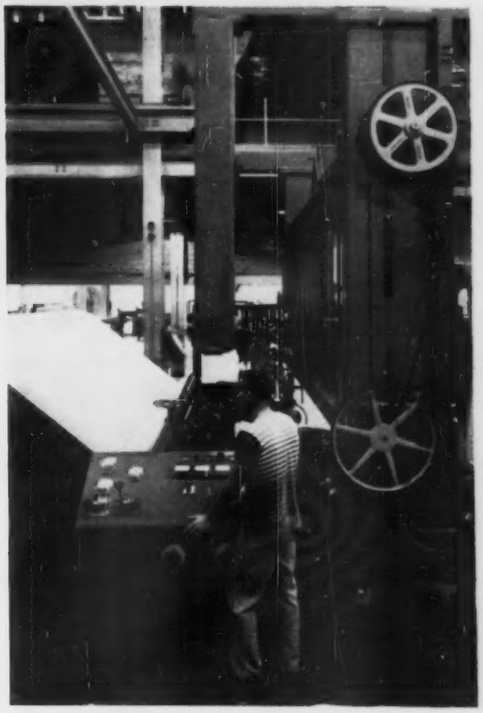


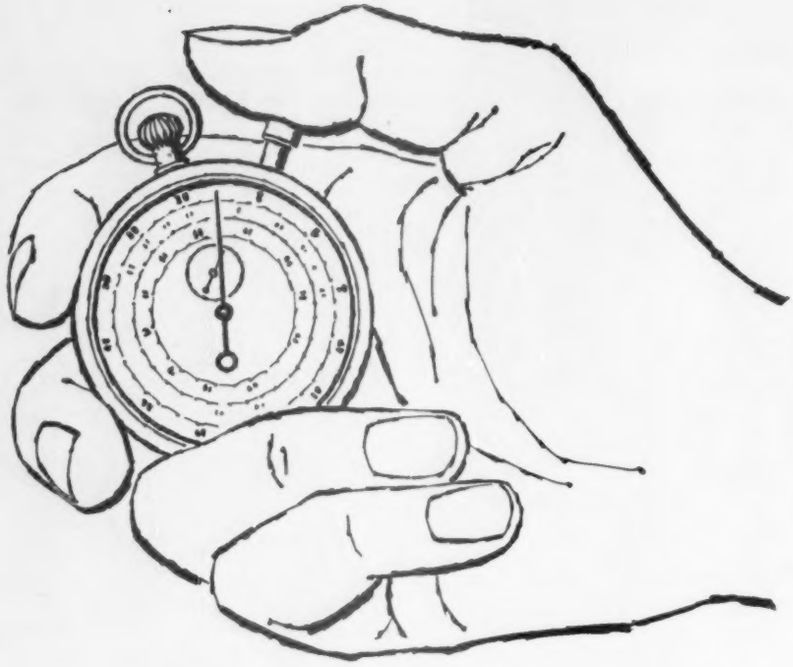
Two 75 hp. d-c. motors drive each rewinder. These motors are capable of momentary overloads of 200% and more. Packaged controls are located in cabinets away from the machine room floor.



Rewinder on #2 machine.

Console for #2 rewinder gives the operator a clear view of the entire winding operation. A turn of the hand wheel changes winding speeds. Acceleration and deceleration rates are automatically programmed by Reliance electronic regulators.





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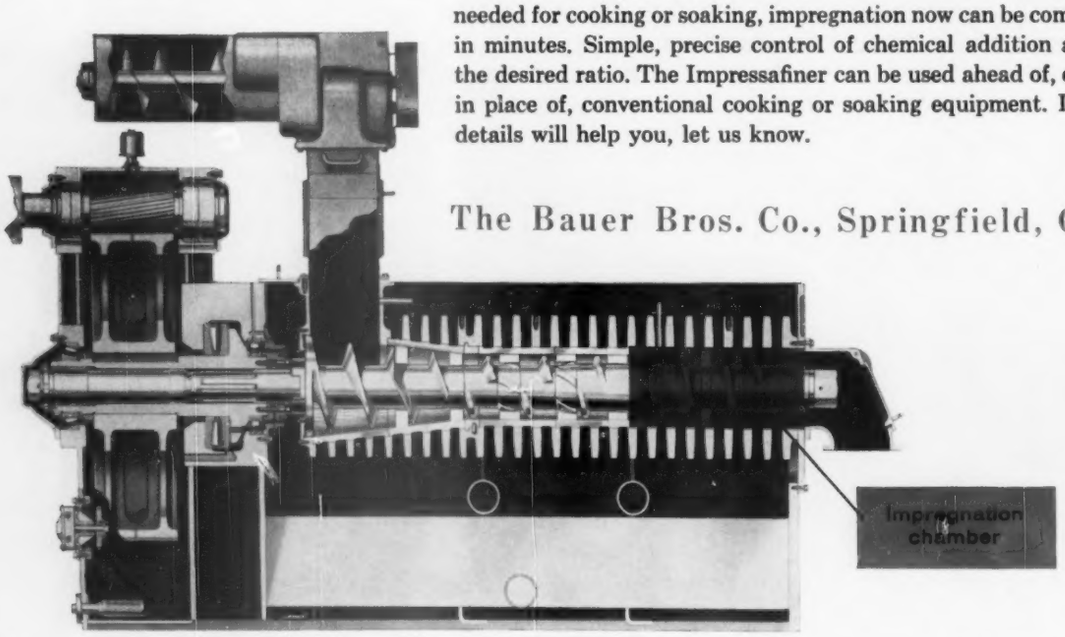

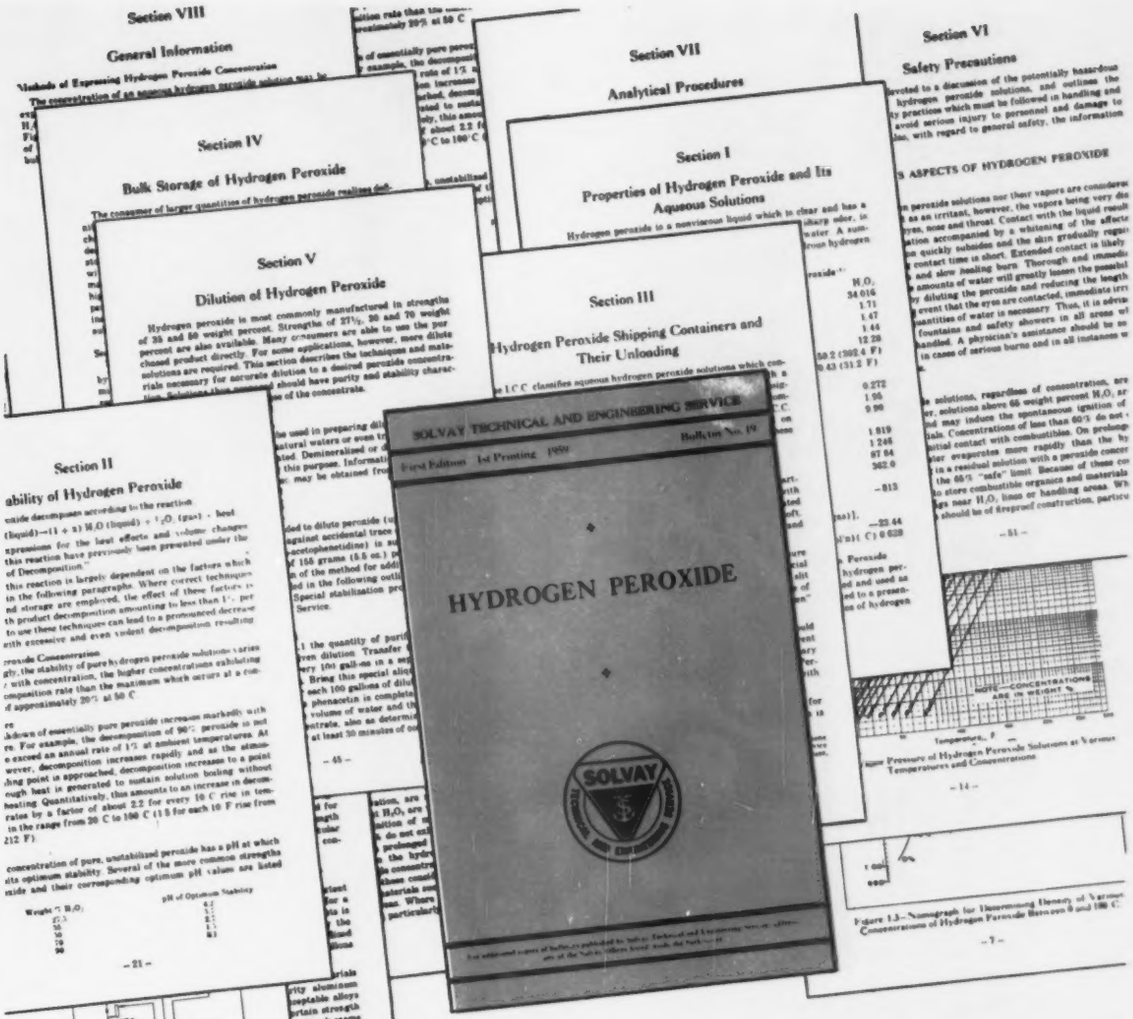

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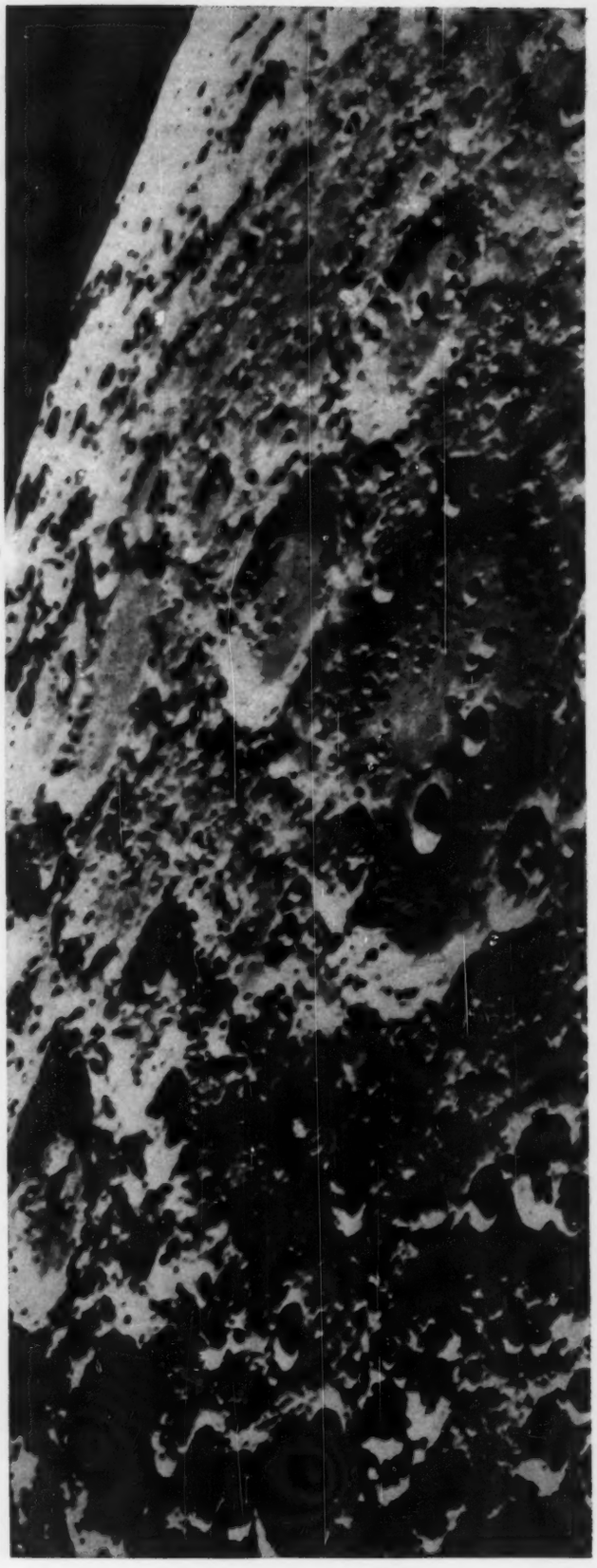

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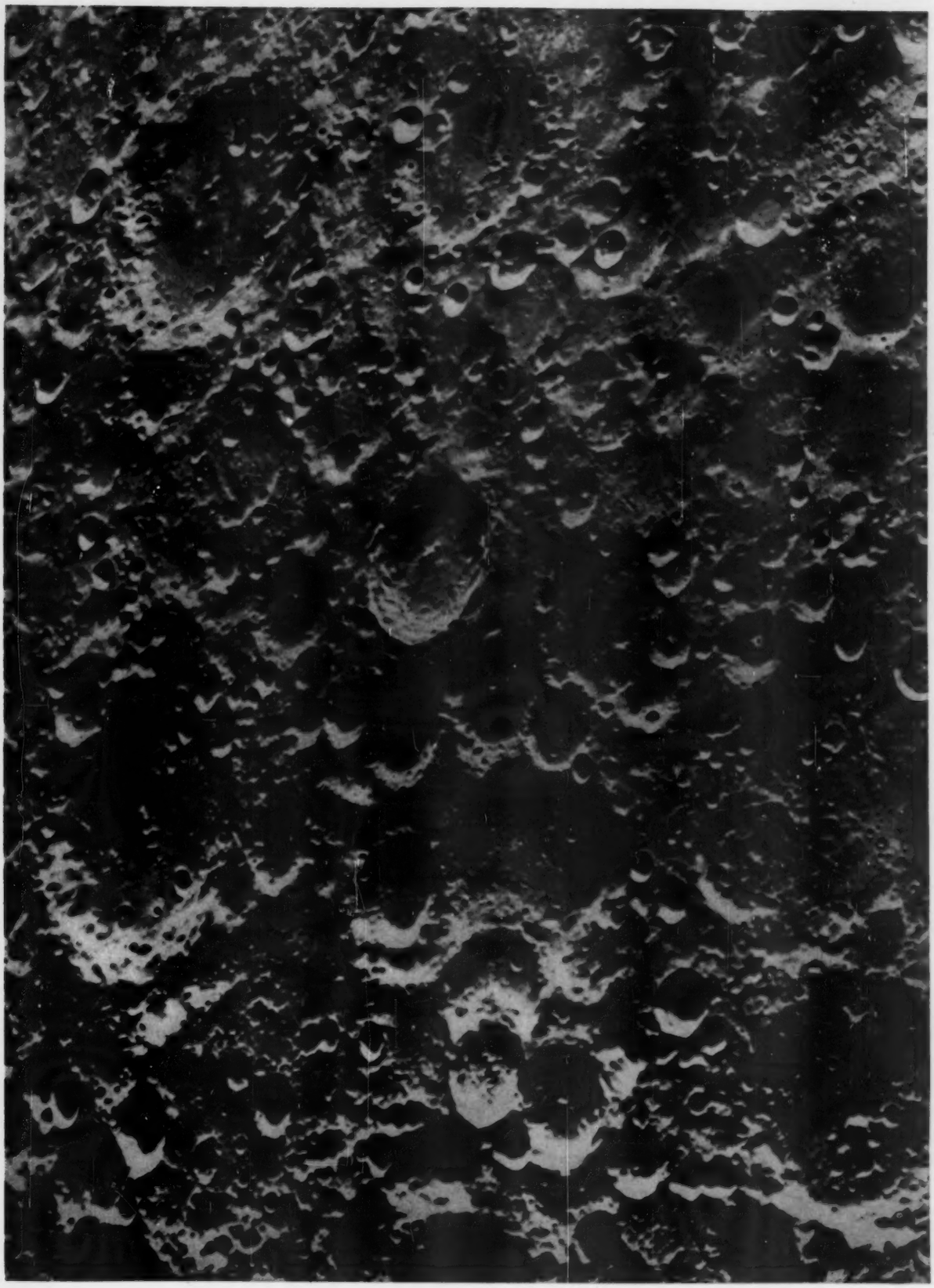

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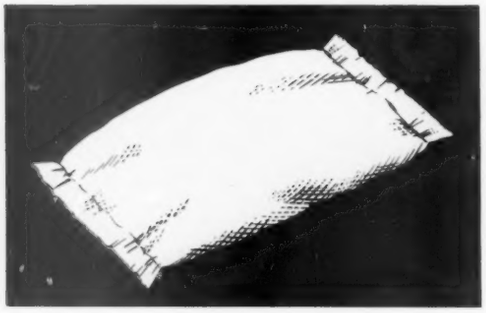

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Experts Evaluate TAPPI Engineering Papers

An outstanding array of specialists in their respective engineering fields are presented on this and following pages. They are authors of exclusive articles especially written for PULP & PAPER, which appraise the importance and constructively criticize the papers presented at the 14th annual TAPPI-sponsored Engineering Conference in Pittsburgh.

In all cases these gentlemen were actually the chairmen of the sessions which they describe. Their valuations and comments are based upon intimate experience with the subject matter. They are all leaders in TAPPI's Engineering Division and PULP & PAPER is very proud to be able to offer these concise analyses of what was important in Pittsburgh.

SYSTEMS ENGINEERING

Goals, Obstacles and Achievements in Pulp and Paper Automation

By DR. EDWARD F. THODE

Reviews and comments on Engineering Conference papers, especially written for readers of this magazine.

● Progress in application of systems engineering and automatic computer technology was brought into sharp focus by speakers at Chemical Engineering Session I of the 14th TAPPI Engineering Conference. The goals and obstacles involved were discussed by Dr. T. M. Stout and Dr. Joel O. Hougen, while two concrete industry achievements were presented by K. I. Mummé and C. E. McCarty.

This session was part of a long-range information and education plan in the broad areas of systems engineering and operations research which was initiated by the TAPPI Chemical Engineering Committee over a year and one-half ago. Prominent in organizing this activity were: Ray Curtis, retiring Engineering Division chairman, Prof. Lyle Jenness then Chemical Engineering Committee chairman, Art Flummer then vice-chairman, now chairman of the committee, and Clint Bowen, former committee secretary.

The first session in the series was held at the 1959 TAPPI Annual Meeting where systems engineering and operations research work were defined and discussed. This work involves taking an overall view of a process or a plant as a whole and systematically evaluating all significant factors with a view toward obtaining and maintaining the "best value" of some objective, such as yield, product quality or manufacturing profit. Some paper industry applications of considerable interest were also presented in February.

Coming to Pittsburgh, the program moved in the direction of specific prescriptions for attacking problems in these areas and further fine examples of pioneer paper industry activities.

Process Understanding

Dr. Hougen, of Monsanto Chemical's Research and Engineering Division, led off the session with a critical discussion of the process understanding required for systems engineering, illustrating his talk with examples from the chemical industry. This speaker defined systems engineering

Chairman of Systems Engineering And Operations Research Session

Dr. Thode recently became chief of the Pulping and Papermaking Section, The Institute of Paper Chemistry, Appleton, Wis. He is a doctor of science from Massachusetts Institute of Technology. He was in the Pulp and Paper Section, University of Maine, before joining the Institute.

as "the use of all such properties of physical systems—and associated mathematical and experimental techniques and tools—needed to produce a processing entity or plant with predictable steady state and dynamic behavior."

In elaborating on his topic, Dr. Hougen commented that the problems generally encountered by chemical engineers in process systems work are difficult because of the multiplicity of phenomena which are usually involved. Mixing, heat transfer and chemical reaction are inherently subtle combinations of mechanisms with end results highly dependent on geometric configuration.

System engineers must not only understand fundamental physical and chemical concepts, he asserted, but must also be equipped with a substantial knowledge of experimental techniques and methods of interpreting data.

Dr. Hougen devoted the major portion of his talk to a discussion of advanced methods of dynamic analysis of chemical processes.

Computer Control

Next on the session, Dr. T. M. Stout, of Thompson-Ramo-Wooldridge Products Co., described the digital control computer as a new tool which may prove useful in the pulp and paper industry as a supplement to conventional instrumentation. Capable of dealing rapidly and consistently with complex relationships, the computer finds application to processes meeting several obvious technical and economic criteria. These requirements include frequent disturbances, conflicting objectives, numerous interrelated variables and a potential for dollar gains which can justify the investment in new equipment.

A computer can be used in several ways, Dr. Stout explained:

1. As a data processing device which receives signals from process instruments and presents computed values for use by an operator.

2. As a sequence controller which obtains most of its data from an operator and then exercises direct control over the process, or

3. As a full fledged controller which notes process conditions and takes action without operator intervention.

Design of a computer control system is a difficult task which requires identifying process boundaries, stating process objectives in economic terms, developing control relationships, investigating instrumentation problems and working out procedures for normal and special operating conditions. The hardest part of the job—developing control relationships needed by the computer—may preferably be done from a combination of theoretical considerations and past operating data. These steps have already been carried out successfully in other industries. Dr. Stout closed by expressing his belief that the recent advances in pulping and papermaking technology make it likely that the problems can be solved in this industry as well.

AL-PAC—SENSATION OF ENGINEERING CONFERENCE. The invention of C. E. McCarty of Scott Paper Co. and Dr. W. C. Elmore of Swarthmore College, this machine is believed to be the first computer for industrial engineering and management science problems to be built on the network analyzer principle.

Systems Engineering in the Paper Mill

Turning to reports of systems work in the industry, the next feature of the Systems Engineering and Operations Research Session was a headbox system study reported by K. I. Mummé and L. W. Zabel of the Instrumentation Laboratory, Kimberly-Clark Corp.

Mr. Mummé pointed out that automatic operation of a book paper machine headbox was not possible without sustained oscillation or overshoot causing spillage of stock from the Bird screen tubs.

When the entire system was simulated on K-C's Analog computer it was shown that the control difficulties could not be overcome by any combination of the conventional control settings available on the actual process equipment. Experimentation on the computer did show that the system could be controlled satisfactorily by changing the measurement joint within the system.

When this was done in the mill, Mr. Mummé explained, the headbox system achieved a degree of stability in automatic control almost exactly that predicted by the analog computer.

Scott's AL-PAC for Product Distribution

Last on the program, but biggest news of the session, was the unveiling of Scott Paper Co.'s AL-PAC (Analog Linear Programming Algebraic Computer) by C. E. McCarty of Scott's Operations Research Division and Dr. W. C. Elmore of Swarthmore College.

Basically, AL-PAC is a variation of the network analyzer known to electrical engineers for many years. Messrs. McCarty and Elmore have made an important and original contribution by devising the network analyzer as a model of a product manufacturing and distribution network. By working out the analogies of product distribution limitations and costs to electrical currents and power, the Scott systems men are able to determine almost instantaneously the cost for a given product flow pattern. Similarly, by adjustment of the computer, they can rapidly determine the correct product flow pattern arising from specific limitations on manufacturing rate, delivery requirements and costs of operation.

As with other pulp and paper companies, Scott Paper Co. faces an important economic problem that can be formulated mathematically as a linear programming problem. Basically, Scott has 10 major producing mills in the United States with more than 60

retail products which must serve approximately 140 sales districts.

A major problem is in the proper allocation of product manufacture to the various mills, together with its distribution to the sales districts. To provide a starting point for an analysis of the problem, a simplification was first made to make a hand analysis feasible. Ten producing mills and 17 demand centers with 7 major products were selected as an initial problem.

A grueling hand solution was made to determine how far the then current distribution of company products was from optimum. A comparison of the optimum distribution with the actual distribution showed a possible savings of approximately 5% in shipping charges alone. In working up the results, it became obvious that a computational aid would be required for the analysis, if it were to continue on a regular basis to accommodate changing company conditions.

The practical analog computer now in use is completely transistorized and handles a 24 by 107 matrix uniquely. AL-PAC stands for analog linear programming algebraic computer. It can be used as a fixed program computer in which the computer matrix is arranged to accommodate all necessary possibilities, and initial conditions are set by an ammeter and voltmeter or by setting calibrated dials. A solution is available directly after these conditions are set, and is read out by the ammeter. Parameter changes, general operation and maintenance can be performed by the non-technical operator without, in general, requiring technical assistance.

In developing the computer, an electrical element has been devised that automatically places an upper restriction on the magnitude of the current flowing through a particular path. This lends itself to the solution of problems where maximum flow through a complex network is desired, as well as proving useful in AL-PAC for problems where supply does not equal demand.

Speakers and audience alike, at Pittsburgh, displayed a candid attitude of progressive conservatism. There is much to be gained from a realistic acceptance and application of the principles of systems engineering and automation. Conversely, much time and money may be lost by failure to properly assess obstacles and limitations. The paper industry approach is calculated to maximize such possible gains.

STEAM AND POWER

Pros and Cons of Atomic Power; Plant Pressures and Temperatures

By RUSSELL V. KNAPP
Reviews and comments on Engineering Conference papers especially written for this magazine

PROGRESS REPORT ON ATOMIC POWER—J. W. Magee and Dr. J. H. Wright of Westinghouse Electric Corp.

REVIEW: Plants are compact, eliminate fuel storage areas. Mills need not be near conventional fuels. Since capital cost for a nuclear heating plant is higher than a conventional plant, if we assume the operation and maintenance costs of these two plants are about the same, we must have sufficient savings in fuel costs to offset the higher fixed charges for the nuclear plant to be competitive economically.

Nuclear fuel costs include not only burn-up of fissionable material but also fabrication costs for the high precision core and extensive chemical processing to prepare the fuel for service and to recover the valuable partially spent fuel from the waste fission products. Since various materials can be used in reactor cores only within certain temperature ranges, a relationship exists between nuclear fuel costs and operating temperature. Improvements in metallurgy may permit using cheaper construction at higher temperatures. As the thermal rating of a reactor increases the fuel cost decreases and results in better economics for larger units.

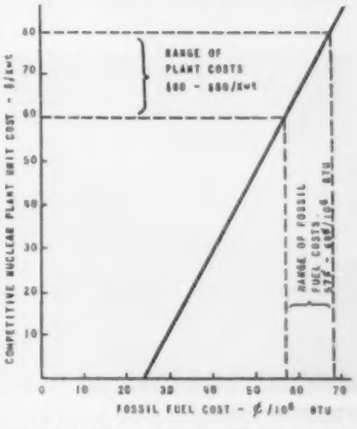
Present competitive situations for nuclear heat are found mostly in plants where large amounts of low pressure steam are required on a continuous production basis and at a high load factor (high yearly use). Plants with low capacity and low load factors are unlikely to find application of nuclear heat advantageous at this time.

COMMENT: This paper, presented by Dr. Wright, consisted of a resume of progress to date, brief explanations of the various types of nuclear reactors with comments on technical and economic feasibility.

Economically, the present day nuclear system cannot supply heat to a working system at high temperatures so it presently is best adapted to systems where large amounts of process heat are required and power generation is of minor importance.

At the present time nuclear fuel costs are much higher than fossil fuel costs, so it appears that additional progress must be made before use of nuclear power in the Paper Industry will be economical, except in a relatively small number of special applications.

Fossil Fuel Is Cheaper Now Than Atomic Fuel



ECONOMIC COMPARISON: Competitive nuclear plant unit costs vs. fossil fuel cost.

Equitable Allocation of Costs for Process Steam and Electric Power in Paper Mills—Mr. G. D. Farrar of the General Electric Co., Atlanta, Ga.

SUMMARY: In a large integrated pulp and paper mill today, steam and electric power costs may run to $5 million a year for operation alone. A new small integrated mill built today would get close to $1 million. It is important to know what part of the cost is allocated to steam and what part to electrical power so total cost can be minimized.

A simple method was presented which compares two systems. One uses purchased electric power and low-pressure boilers. The other system uses high-pressure boilers and expands the steam down to the process level through steam turbines generating by-product electric power. Each system furnishes the mill the same electric power and the same steam flow to process at same pressures and temperatures.

Basis of method is that operating and capital costs, which must be allocated to process steam when high-pressure boilers are used, are same as these costs would be when steam is furnished by low-pressure boilers alone.

Philosophy of the method is based on condition that some purchased fuel must always be used even when there is no electric power generation because total heat available from by-product fuels is not enough to supply total steam requirements to an integrated mill.

First step in the method is to establish electric power steam and water flow conditions. In the high pressure system, all boilers furnish steam to the turbine at 850 psig 825 FTT. Here the steam can be reduced to the required process level through turbine equipment. Power produced in this manner is the third well-known by-product in the paper mill power dept. Power so generated is economical because the process can use virtually all the heat in the steam leaving the turbine.

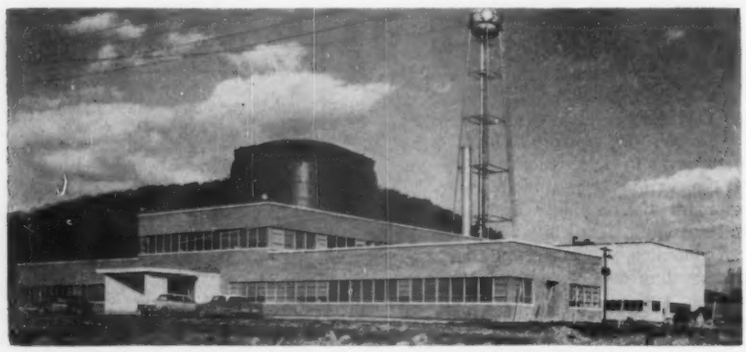
The industrial power station thus has a marked advantage over a condensing electric utility station that has no useful heat sink to recover the heat of vaporization.

COMMENT: Mr. Farrar presented a simple method for equitably allocating operating and capital costs into the two major elements—process steam and electric power. The method should prove very helpful to many companies in the industry.

Panel Discussion Brings Forth Interesting Comment

Economic Aspects of Pressures and Temperatures for Paper Mill Power Plants—panel discussion, monitored by J. C. Hoad, John C. Hoad & Associates.

Four different aspects were considered by the various panel members: I. H. Landes, General Electric Co., discussed relation to turbine generators; H. B. Wallace, Jr., Foster Wheeler Corp., relation to power boilers; F. W. Hockmuth, Combustion Engineering, Inc., and W. J. Darmstadt, Babcock & Wilcox Co., relation to chemical recovery units; and T. J. Judge, International Paper Co., Mobile, Ala., relation to mill operator. The various branches of the subject were ably presented by the panel members and discussion of some items was quite spirited and most interesting.



WESTINGHOUSE CORP.'S TEST NUCLEAR REACTOR SITE, at Waltz Mills, Pa., which was toured by many of the pulp and paper industry engineers. They also visited Westinghouse's Central Research Center, Jessop Steel Co., plant and National Annealing Box Co., the latter two in Washington, Pa.

Russ Knapp Chairmans Sessions Which Stirs Lively Discussion

Some questions and discussions trace to recent explosions in mills. Mr. Knapp is a veteran in his field having spent 11 years with Mosinee Paper Mills, Mosinee, Wis., where he is power engineer. Before that he was with Bailey Meter Co. for 27 years, often bringing him in close contact with mills.

Summary

Mr. Landes pointed out the significant gains in by-product power available when higher pressures and temperatures are used for power production with extraction and back-pressure turbine units supplying process steam.

Mr. Wallace covered the relationship between capital costs of steam generating equipment as related to boiler efficiency and method of firing and suggested that potential purchases of high pressure and temperature units avail themselves of all possible assistance the boiler manufacturers would gladly provide in making their economic studies of such equipment.

Mr. Hockmuth presented the paper prepared jointly with **Mr. Darmstadt.** These authors were in basic agreement with the preceding authors, but emphasis was made that by-product fuel imposed design limitations not experienced with the common fossil fuels and that as limits in pressure and temperature of such units were approached, increasing care must be used to keep maintenance and operating conditions under control.

Mr. Judge stressed that operating and maintenance personnel must be better trained for high temperature and pressure plant operation; that management and technical men be made familiar with new requirements of "safety, maintenance procedures and operating practices"; and that all concerned need to understand that more time is required for starting up and shutting down, welding techniques for stainless steels be strictly adhered to, feed water treatment must be correct, etc.

In summary, Mr. Judge stated that

such equipment "does not present undue operating problems" and that in making a study for a higher steam condition plant "it should not be necessary to make economical adjustments due to different predicted operating problems."

Q. and A.:

Among the questions directed to the panel members from the floor was one directed to Mr. Darmstadt concerning the desirability of having the pulp mill or the steam and power department operate the recovery boiler plant.

Mr. Darmstadt maintained a neutral position in the matter as many pulp mills have excellent operation. In others, however, it might be better to have the recovery boilers operated by the steam and power department.

The TAPPI Steam and Power Committee has the foregoing subject on its program for presentation at Jacksonville, Fla., in the fall of 1960, because of the increasing number of furnace explosions being experienced in recovery boilers.

Probably the most interesting question asked of Mr. Judge, concerned removal of iron oxides from condensate returned to a high pressure-high temperature boiler plant after a shut down, most of the oxide presumably coming from paper machine dryers.

Mr. Judge replied that he, as yet, had not found a satisfactory answer, as filming amines, filters and other means which had been tried did not do a complete job.

CORROSION

Good Digester Overlays Needed, Minimum 10 Year Life Desired

By EDWARD W. HOPPER
Reviews and comments on Engineering Conference papers especially written for this magazine

● Importance of corrosion to the pulp and paper industry was indicated by the attendance at the corrosion sessions of the Engineering Conference in Pittsburgh. The questions raised show industry representatives are becoming more conscious of the problems caused by corrosive attack and the resulting costs of replacements, expensive materials of construction, and down time.

There were two sessions—one a panel discussion of digester overlays with six panelists participating. Four papers were given in the other session.

PANEL DISCUSSION—OVERLAY REPAIR OF ALKALINE PULPING DIGESTERS—Moderator, E. W. Hopper.

This subject had been discussed previously at an interim corrosion committee meeting on June 2, 1959 in Pittsburgh. It is an important subject. Stainless overlay has proven to be an aid in extending the life of carbon steel digesters.

However, there have been some failures of overlay. This has caused some companies using or considering the use of overlay to slow down on its employment.

The purpose of this session was to bring all phases of overlay before the committee and guests and to try to arrive at a course of action which would develop the causes for failure, and the steps necessary for applying overlay which would give uniformly long life.

Panel members were Zane Blanchard, Portland Co., H. M. Canavan, Mutual Boiler and Machinery Insurance Co., E. G. Holmberg, International Nickel Co., W. H. Parker, Hartford Steam Boiler and Insurance Co., Peter Zouck, Alloy Cladding Co., and Lou Dela Grange, Hinde and Dauche Div. of West Virginia Pulp and Paper Co., who filled in as an industry representative for David Innes of International Paper Co., Mobile, Ala., who unfortunately broke an arm and could not attend. The panelists presented ten minute reviews of the subject from the development, installation, experimental, and mill operational standpoint.

The first application of stainless overlay in alkaline digesters was in Jan. 1950. It followed an extended series of corrosion and physical tests on weld test coupons of 308 and 310 stainless overlay. The results showed the 310 to be best suited for the work and it was employed in the early installations.

Early Overlay Work

The first overlay was installed by the manual arc process using lime coated type 310 stainless rod. The welding was done carefully and small diameter rods were used. The welding was done slowly, the beads were overlapped, defects or low spots were covered, slag was cleared from the beads, and no appreciable build-up of temperature in the steel shell was permitted. The coating was deposited using about 8¾ to 10 pounds of rod per

Edward W. Hopper Again Reviews Engineers' Corrosion Session

. . . as he has done several times in the past for this magazine. Mr. Hopper, nationally noted specialist in metallurgical and corrosion problems, is chairman of TAPPI's Corrosion Committee. His offices are at 905 Union Trust Building, Pittsburgh 9, Pa. He wrote the article "Kraft Mill Extends Digester Life," explaining early success of repairs by overlays, in PULP & PAPER, Sept. 1957. He is a consultant to West Virginia Pulp and Paper Co., J. F. Pritchard & Co., and others. He attended Columbia U. and Pratt Institute and developed the first electrolytic tin strip plating process with Dr. Colin G. Fink.

square foot to give a minimum of ⅛ in. of stainless weld metal coverage. Everything possible was done to prevent dilution of the weld metal with carbon steel from the shell. There was little or no attempt made to prepare the carbon steel surface except to wash down well and see that it was dry.

Samples of some of this early overlay trepanned from the digesters were exhibited. These coupons after having been subjected to more than eight years of exposure to alkaline digester corrosion show no evidence of attack, pitting, grooving, cracking or scaling. They are as bright and shiny as they were when installed.

Overlay caught hold slowly. It was originally designed as a means for repairing critically attacked areas so that the digester life could be extended. It served its purpose admirably and the first digesters to be so treated are still in service seven to almost ten years later. Most of the early overlay ranged from less than one square foot to several hundred square feet in area.

Overlay as Complete Answer

Eventually the idea developed that stainless steel overlay was a complete answer to alkaline digester corrosion. It was assumed that it could be installed with no precautions taken to assure thickness and analysis of coating or freedom from dilution with carbon steel, microfissures in the weld metal, gaps between weld beads, slag inclusions, or other welding defects. The early slow, careful welding was put aside and speed and thin coatings were employed.

Speed and cost became critical factors in the use of overlay. It became apparent that the process could be used to advantage. However, it took considerable down time and was expensive. Methods were developed for automatic weld overlay. An early automatic installation involving large surface areas failed after a short service life. Other automatic as well as manual arc overlays have also failed.

In the early automatic welding, travel speeds of as high as 120 inches per minute were reported with coatings as light as 2¾ pounds of metal per square foot. It was reported that there were gaps between beads as wide as ⅛ in. as installed.

Types of Attack and Cracking

Following the panel discussion, J. A. Goodford of Crucible Steel Co. showed a number of colored slides illustrating the condition of overlay in digesters. These showed the types of attack and cracking which have caused failure. The slides also showed areas which were not attacked and these included pictures of some of the first overlay applied.

Samples of trepanned coupons from overlayed areas have been examined metallographically and chemically by Robert Timko, James Naser and C. R. Carlisle of Jessop Steel Co. They found dilutions ranging from 20 to 30% in some manual arc to 55-60% in flux shielded automatic overlay coupons. They had prepared photo-micrographs of cross sections of manual arc, and gas shielded, and flux shielded automatic overlay coupons taken from digesters where the overlay showed severe attack. Some of this attack developed parallel to the direction of welding. Some of the penetration had occurred in a zone directly at the boundary between two beads. In other coupons, the attack was parallel to the weld direction but appeared as deep cracks which penetrated down to the carbon steel base metal. In other cases, cracks transverse to the direction of welding occurred and these were generally confined to one bead in width.

In the automatic welding, the weld metal generally contained numerous micro-fissures and cracks. Some of these fine cracks appeared to have contributed to the deep attack, in others there was no evidence that they had aggravated the attack pattern. In the case of the manual arc overlay, some beads or portions of beads were deeply attacked while beads adjacent were left almost unaffected.

In almost all cross sections examined there was a fine structure in the weld metal adjacent to the weld junction and confined to the second of the beads applied. This was quite marked when compared to the coarse columnar structure generally present. The fine structure termed by George Pease of International Nickel Co. as a "chicken wire structure" tended to etch more readily and gave a darker band in the pictures. Also, in this band along the bead junction, there were solid, dark, heavily etched areas which were undoubtedly caused by carbon steel wash down along the bead.

Chemistry of Weld Deposits

Considerable discussion took place over the chemistry of weld deposits.

Many of the early overlays purposely contained about .50% of molybdenum, and some as much as 2.50% molybdenum in the 310 weld rod. The idea behind the use of the moly was to aid in reducing the tendency for microfissuring.

At the present time, a number of overlay installations are being made with a wire or rod containing 28% chromium, 21% nickel and 2.75% moly. Some are also being installed with .50% moly. The idea is to deposit an alloy containing an appreciable amount of ferrite which will prevent micro-fissuring.

There is evidence from certain welds in clad type 316 stainless digesters, which would tend to support the fact that the ferrite will prevent the cracking type attack in the weld metal. These successful welds contained 5 to 11% of ferrite and they have not shown a loss of corrosion resistance compared to the 316 clad stainless adjacent. However, in this case, welding was carried out so that there would be no carbon steel dilution in the exposed surface of the weld metal.

The usefulness of the analyses with high moly and ferrite present should be demonstrated by the installations now installed or being applied. It will take time to determine what service life can be expected. Whether the moly addition will correct bead junction attack still remains to be seen.

Special Study Assigned Committee

Figures were quoted at the meeting to indicate that overlay failures run as low as 3% and as high as 7% of the total surface of overlay currently in service. From the concern of industry representatives and their comments, it would appear that these figures are too low. We should also take into consideration the fact that some of these installations, now in service for six months to two years, are showing the beginning of attack.

The alkaline pulping industry is looking for an overlay procedure or specification which will insure good overlay installations. I have not heard any figures set on the life expected but I would consider that this should be for a minimum of ten years. If overlays continue to fail as they have, some other method for protecting digesters will have to be developed.

"Alkaline Digester Corrosion and Overlay" has generated sufficient interest so that the corrosion committee has decided to set up a sub-committee on the subject. This sub-committee will operate under Robert C. Stamm of West Virginia Pulp and Paper Co., New York, as chairman, and Walter Parker, of Hartford Steam Boiler and Insurance Co., Hartford, Conn., as secretary. It has numerous applicants

for membership and should have an interesting program for future meetings.

Comments on Four Papers:

USE OF TITANIUM IN PULP AND PAPER INDUSTRY–Walter K. Boyd, Battelle Memorial Institute, Columbus, O.

The author outlined some conditions where titanium gave excellent corrosion resistance as well as those where it was likely to fail. He noted excellent resistance to chlorine dioxide and wet chlorine and its present use in chlorine dioxide mixers and a washer wire. He mentioned the high resistance to strong alkaline liquors such as those present in the kraft process and also to neutral sulfite and ammonia base acid sulfite liquors. Another observation was the improved resistance of a titanium alloy containing an addition of 0.1% of a precious metal such as palladium to reducing acid conditions. The economics involved in the use of titanium versus other metals was also discussed.

CORROSION OF FOURDRINIER WIRES–John P. Gerhauser, Appleton Wire Works Corp. Appleton, Wis.

The author listed the different types of corrosion to which Fourdrinier wires are subject. Failures of wires were illustrated by slides showing photo-micrographs of wire sections. Mr. Gerhauser also showed a section of wire which had failed due to the embrittling effect of amalgamation caused by pick up of mercury compounds. The value of a conductivity meter in studying mill corrosion problems was outlined and its use in determining the efficiency of washing stages was pointed out. The effect on corrosion rates of soluble salts, pH, and temperature were discussed.

It was mentioned that complete washing of pulp or stock was important in reducing corrosion and that this was particularly true in mills where washing equipment was overloaded due to the employment of neutral sulfite cooking. Nickel-plated, tin-plated or plastic-coated wire have greatly minimized corrosion.

DIGESTER CORROSION EXPERIENCE AT UNION BAG-CAMP PAPER CORP.–H. B. Harris, Jr. and L. H. Park, Union Bag-Camp, Savannah, Ga.

The authors gave a complete history of sulfate digester corrosion at the Savannah Mill. This work, presented by Mr. Harris, is of importance to the industry because it gives data on the performance of 61 digesters in one mill. This permits us to compare the case histories of various types of steels, corrosion resistant alloys, and different linings in a single mill under fairly uniform operating conditions.

CORROSION OF MILD STEEL IN ALKALINE PULPING LIQUORS–SPECIAL EFFECT OF SULFITE ION IN KRAFT WHITE LIQUOR–Richard B. Kesler, The Institute of Paper Chemistry.

This completes a series of papers based on laboratory studies carried out at the Institute. The author previously pointed out the effect of other ions in increasing or decreasing corrosion rates. In this case he has pointed out the effect on corrosion rates of a decrease in the sodium sulfite content of the liquor. With a lowering of sodium sulfite content by only 0.3 g/l., the author found a six or seven-fold increase in corrosion rate. He stated that the corrosion rate increased greatly when the sodium sulfite content of the liquor was reduced to about 1.5 g/l., laboratory investigations of this type can be of great value if the tests are made and followed up under actual operating conditions. If the sulfite ion does influence corrosion rates on mild steel in alkaline white liquors to this extent, it may be the factor or one of the factors which have made this attack such an expensive problem. Studies of this type should be followed carefully by the industry. It could be the means of eliminating corrosion resistant alloys, linings and overlays and an end to alkaline digester corrosion on carbon steel digesters.

ELECTRICAL ENGINEERING

Rectifiers – Opinion Differs; Effect of Drives on Felt Life

By R. F. SORENSON

Reviews and comments on Engineering Conference papers especially written for this magazine.

● The attendance at the Electrical Engineering Session was very gratifying. An unofficial count was 216, the largest we have had for the sessions to date. At the 14th Engineering Conference, the sessions were, in general, continuous three hour sessions rather than splitting it up in a morning and afternoon session. This, is my opinion, was very successful and is a preferred way of handling it.

Five papers were presented in our session and two more were presented by title only. Presentation by title only is very effective in calling attention to the paper and giving the author a few minutes to summarize it. Here follows the papers with comments:

ELECTRICAL CONTROL OF FOURDRINIER HELPER DRIVES–Messrs. S. J. Campbell, Westinghouse Electric Corp., and D. C. Pier, Beloit Iron Works.

This is a subject that many of us are interested in at the present time, since many of us are applying them on our mechanical drives for paper machines. It is interesting to note that electrical helper equipment supplied on some machines can amount to 1,000 hp in seven or eight motors. This, of course, involves control cubicles and motor generator sets. This is necessary in supplementing the mechanical drive where it is more convenient and practical with electrical equipment.

GENERAL PURPOSES SEMICONDUCTOR RECTIFIER POWER SUPPLIES IN THE PAPER INDUSTRY–G. E. Shaad, General Electric Co.

This paper was a general review of the development and application of copper oxide, selenium, germanium and silicon rectifiers. It was especially interesting in that it confined itself to the rectifier only and did not go

into the equipment in which they are applied.

Mr. Shaad brought out the practical aspects in applying rectifiers, and a very lively discussion followed the paper.

Several instances of rectifier failures when applying them instead of d.c. rotating exciters were brought out and the discussion ended on a tone that was somewhat unfavorable to rectifier application. In my opinion, this was unfortunate in that I believe the paper industry will benefit greatly by the use of rectifiers.

Manufacturing techniques are improving and application problems are being minimized. I might point out that the St. Regis mill in Jacksonville used selenium static exciters entirely in their recent expansion and have had no failures in the two years of operation.

WINDER POWER REQUIREMENTS—M. H. Fisher, Westinghouse Electric Corp.

This project report represented much needed information for economical application of drive equipment to winders. Mr. Fisher gathered this information personally as he visited various mills in the United States. This project will be available in data sheet form very soon.

SAFETY IN MILL ELECTRICAL WORK—M L. Perkins, Fraser Paper Ltd., Madawaska, Me.

Mr. Perkins' approach to electrical safety begins at the very beginning of the mill electrical system design, then to the equipment design and finally to training and supervision. Certainly a mill must pay attention to all three to be effective. It is part of an engineer's job to think of safety and all its implications. If we have a fatal accident in a mill, it touches off a program that should have been in progress to prevent the accident from happening.

POWER TRANSFER WITHIN WET FELTS—M. J. Osborne, Bowaters Southern Corp., C. C. Collins, General Electric Co., and J. Knowles, Huyck Felt Co.

This study was an original investigation into the power transfer in the welt felts of a paper machine.

It was found that the tension in the felt produced by the drive motors was very small compared to the static tension placed in the felts and, therefore, has little effect on felt life.

The authors should be complimented on their comprehensive approach to the problem and to the instrumentation techniques developed and used. The paper was well presented by Mr. Osborne.

Dick Sorenson Writes Views On Electrical Engineering Session

Mr. Sorenson chairmanned this session which set a new record for attendance—216 were present. He is also chairman of the Electrical Engineering Committee, one of the most active in TAPPI, succeeding M. J. Osborne of Bowaters in this spot (Mr. Osborne this year became chairman of the entire Engineering Division). Mr. Sorenson is electrical engineer for the Pulp & Paper Division, St. Regis Paper Co., and makes his headquarters at the Central Engineering Office, Jacksonville, Fla. He formerly was electrical engineer for Union Bag in Savannah.

RECOMMENDED PRACTICES AND PURCHASING SPECIFICATIONS FOR MEDIUM VOLTAGE MOTOR CONTROL—H. W. Wright, Allis-Chalmers Mfg. Co., presented by title only.

The recommended practices and purchasing specifications for medium voltage controls will be of great use to the purchaser in calling to mind the various factors that he will want to consider when purchasing 2300 and 4160 volt motor controllers. It should be noted that definite dimensions are left out of the recommendations as they would place a restriction on future development on the manufacturer. This is the first time such a specification has been attempted by our industry, and we now hope to formulate a set of functional specifications which may be a more practical approach in purchasing.

SUPERCALENDER POWER REQUIREMENTS—R. J. Farrell, Reliance Electric & Mfg. Co.—presented by title only.

The report on supercalender power requirements represents the efforts of several people over the last seven years to arrive at power constants that could be used in selecting the horsepower for a given supercalender drive.

The report is really a progress report in that the constants have not been arrived at. The various factors and the manner in which they effect the power requirements of a supercalender are brought out. We hope this project may be continued in the future and the final goal reached.

I feel that all of the authors on our program were exceptional in their presentations and it was a pleasure to have been chairman.

Heads Biggest Tappi Division

PULP & PAPER readers know him

M. J. (Johnny) Osborne, electrical supt., Bowaters Southern Paper Corp., is the new national chairman of TAPPI's biggest division—the Engineering Division. He succeeds Ray Curtis, Scott Paper Co.

PULP & PAPER magazine extends its warm congratulations and best wishes for success to Mr. Osborne—for a special reason. Thousands of readers of PULP & PAPER are familiar with Mr. Osborne and his views because for several years, while he was serving on TAPPI's electrical engineering committee, and later, while its chairman, he wrote exclusive articles for this magazine. His articles evaluated and interpreted not only the progress and developments in the electrical field, but also in digester corrosion studies, as they were reported in national TAPPI meetings.

He himself conducted important nationwide electrical studies in mills, and he was an early advocate of a separate process instrumentation committee, which now exists, and he took active interest in corrosion sessions, which have led also to a separate corrosion committee. Mr. Osborne was a pioneer digester corrosion investigator in a number of Southern pulp and paper mills.

In his career, he has spent many years under K. O. Elderkin, working under him as electrical supt. at Crossett Paper Mills and moving with him to Calhoun, Tenn., when the Bowaters Tennessee project was started. Of course, he played a major role in development of the highest speed newsprint machines in the world at Calhoun, and record-breaking kraft machines at Crossett.

INSTRUMENTATION

Instrumenting Soda Recovery System; How Bowaters Department Works

By JAMES K. POWELL
Reviews and comments on Engineering Conference papers especially written for this magazine.

● The Process Instrumentation Committee of the Engineering Division of TAPPI presented three papers on different phases of instrumentation at Pittsburgh. Audience participation indicated strong interest and was proof of the changes that have been taking place in this field.

The history of instrumentation, as we know it now, is relatively young. Most industrial instrumentation has been developed in the past 25 years. Development has been slow, as manufacturers of instruments were guided by suggestions and criticisms from users.

The pulp and paper industry has been particularly slow to take advantage of instrumentation, most of this industry's advances occurring in only the last ten years. But rapid increases in production of pulp and paper has made instrumentation a necessity, to maintain product quality and machine efficiency.

Here are reviews of the papers given at Pittsburgh:

INSTRUMENTING "THE EXPERIMENTAL W-P SODA RECOVERY PROCESS"—James W. Taylor, Consolidated Water Power and Paper Co., Wisconsin Rapids.

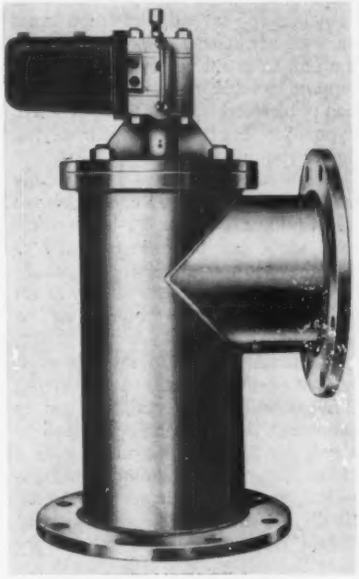
Mr. Taylor briefly explained the sodium base acid sulfite and NSSC liquor treatment and recovery process as originated by the Western Precipitation Corp. (see PULP & PAPER, Apr. 1959, page 82, and June 1959, page 69). Then a detailed account was given of the instrumentation required on the process, with each portion of the process being treated separately. An effective use of slides was made, with one-half of each slide showing a schematic drawing of a portion of the process, and the other half showing a schematic diagram of the instrumentation used on that portion. Instances were mentioned where necessary changes were made in the instrumentation where the first selection failed to do the required job.

One unique bit of instrumentation mentioned is on the sulfur dioxide scrubber head tank. Two bubble pipes in the head tank are utilized to control the density of the liquor. But if the level of liquid in the head tank drops below the level of the top bubble pipe, the system acts as a level control, and water is automatically added to the head tank. This system maintains a safe liquid head over the tower packing.

The paper was well-presented, and illustrated how various types of control systems can be integrated into one complete process. The author mentioned that the amount of instrumentation might well be reduced on a commercial installation.

A VERSATILE NEW CONSISTENCY REGULATOR—K. I. Mummé and N. W. Swanson, both of Kimberly-Clark Corp., Neenah, Wis.

This paper, presented by Mr. Swanson, covered the experimental work performed on a consistency regulator recently placed on the market by the Fischer & Porter Co. (the "Consistorator"). The proper installation procedure was mentioned and the theory of operation discussed. Various operating difficulties were mentioned, with possible remedies for each.



FAST RESPONSE is one feature of new Consistorator consistency regulator, says Kimberly-Clark Corp. Made by Fischer & Porter, the unit is simple, versatile, relatively inexpensive.

James K. Powell Chairmanning Process Instrumentation Session

He also serves as the chairman of TAPPI's Process Instrumentation and Control Committee. He is the Instrument Dept. Supt. for Bowaters Southern Paper Corp. at Calhoun, Tenn., and one of the papers he reviews is his own—on how Bowaters organized its Instrument Dept. at the big Tennessee newsprint mill.

The results of an evaluation of the regulator when used on bleached and unbleached sulfite pulp was discussed. The results showed that at least on this type of pulp, successful consistency regulation can be obtained.

Questions from the audience and the subsequent answers seemed to refute the author's claims that neither freeness changes nor temperature changes affected the regulation. The difference of opinion confirms our contention that, as yet, no one has the final answer to consistency regulation.

ORGANIZATION AND OPERATION OF AN INSTRUMENT DEPARTMENT IN A PAPER MILL—J. K. Powell, Bowaters Southern Paper Corp., Calhoun, Tenn.

This paper described the original organization and subsequent growth of the instrument department at Bowaters Southern.

Although it is necessary for an instrument maintenance group to be "tailored" to fit a particular mill, there are some factors which should always be considered. Among these are: The types of work to be done, how much breakdown and preventive maintenance will be done, what types of equipment will be serviced, and whether the maintenance group will be attached to another department.

Although starting out as part of the Engineering Dept., the maintenance group now has full departmental

status. The personnel in the department now consists of three supervisors (instrument supt., instrument foreman and asst. instrument foreman), ten mechanics (four shift and six day mechanics) and six day helpers. The supervisor in charge is designated as instrument supt., and through direct contact with top management is kept aware of mill operational changes (at Bowaters he reports to the production mgr.).

The instrument department is responsible for the specification, selection, installation, operation, and maintenance of all instrumentation, and the training of department personnel. The instrument supt. is responsible for solving the engineering problems which arise.

The instrumentation is installed by department personnel or contractor personnel, depending upon the size of the job.

Maintenance is carried out by day workers and shift workers with emphasis on preventive maintenance. Records are kept on daily, weekly, monthly, and semi-annual maintenance. A permanent file card system is kept on all instrumentation. Calibration facilities for all mill instrumentation is available in the instrument shop, which is centrally located on the mill operating floor level.

Training of department personnel takes advantage of instrument manufacturers' schools, and the company policy of paying for approved educational courses. Instrument helpers are recruited from other mill departments and trained by instrument department supervisory personnel. Safety training is stressed by active participation in the mill safety program, augmented by departmental safety meetings.

As suggested, an instrument department should be tailored to fit the individual mill. A goal should be set toward which to work. The instrument department discussed here has been in operation five years, and has not yet reached the goal which was initially set. However, by applying the basic organizational factors mentioned before, it is felt that the department has developed sufficiently to efficiently handle the multitude of problems which arise with the mill instrumentation.

SANITARY ENGINEERING

Air Is Effectively Utilized In Handling of Effluents

By WILLIAM A. MOGGIO

Reviews and comments on Engineering Conference papers especially written for readers of this magazine.

- **A RATIONAL APPROACH TO AERATION METHODS INVOLVED IN BACKWATER SOLIDS RECOVERY—L. L. Klinger, Whippany Paper Board Co., Inc.**

The author's presentation dealt with the flotation type saveall in which dissolved air is utilized as the flotation agent, with or without chemical adjuncts. A simple laboratory technique was described for evaluating the feasibility of flotation as a suspended solids removal process for any pulp and paper mill effluent.

Flotation savealls, in spite of many successful installations, are subject to limitations and eccentricities, some of which may be overlooked because of lack of experience or the enthusiasm of prospective users. For each application there exists a critical range of operation relative to chemical components of the furnish and chemical additives for flocculation. A fine degree of pH control as well as chemical additive control is necessary.

There is a practical limit for influent solids concentration above which it is advantageous to divert white water back into process rather than into the saveall. Retention times must be considered carefully in sizing the unit to avoid velocities too low to support flotable materials. Recirculation of clarified water is to be avoided, if possible, because of accompanying power requirements.

Pump selections must be carefully made for both the feed and recovered solids pumps. Further, air-laden solids have to be put to reuse carefully so that they do not affect the manufacturing process. Bacterial quality of reclaimed solids and water must be controlled.

Fluctuating flows to savealls must be leveled off by means of a receiving tank preceding the saveall. Air supply lines must be adequately designed to permit air supply adjustment over a wide range. Scraper adjustments are critical, particularly in circular units. Finally, positive and sensitive level control is imperative for satisfactory saveall operation.

Among the advantages of savealls cited by the author are the small size and volume required to complete its functional requirement of effluent treatment, low cost of installation, maintenance and supervision. Further advantages are their high operating efficiency, permitting the utilization of fairly valuable reclaimed stock and highly clarified reclaimed water and resulting in a reduction of stream

Wm. A. Moggio Has Long Experience in Stream Problems

He chairmanned the Sanitary Engineering session, which he reviews here for PULP & PAPER readers. Mr. Moggio is By-Product Mgr. of St. Regis Paper Co.'s Lake States Yeast & Chemical Division, Rhinelander, Wis. He was former chief chemist specializing in lagoon and effluent matters for East Texas Pulp & Paper Co. and was a specialist for years with National Council for Stream Improvement. He earned b.s. and m.s. degrees at Rutgers University.

pollution.

REVIEWER'S COMMENTS—This paper is a frank evaluation of savealls pointing out their shortcomings and eccentricities as well as advantages. The author's statements are based on his many years of experience in the consulting field and this industry during which time he had the opportunity of designing, operating and evaluating saveall performances. The contents of his paper should be particularly valuable to engineers in the preparation of specifications for saveall installations and the design of appurtenent equipment so that they may avoid the pitfalls which the author candidly enumerated.

OXIDATION LAGOONS—R. O. Blosser, National Council for Stream Improvement.

The author reviewed the mechanics of the biological process for B.O.D. removal which is the basic principle upon which oxidation lagoons function in stabilizing pulp and paper mill effluents. The role of oxygen, nutrient chemicals, temperature and microorganisms in this biological process for effluent stabilization was noted.

Oxidation lagoons, with respect to space requirements, occupy an intermediate position between accelerated biological treatment processes (such as activated sludge) and storage basins used for holding mill effluents until receiving stream flows are suitable for effluent disposal. B.O.D. reduction efficiencies, however, approach those of the activated sludge process if the proper environmental conditions prevail.

The maintenance of an adequate supply of oxygen in contact with the lagooned effluents is one of the most important factors in achieving accelerated oxidation rates. In quiescent basins oxygen is transferred to the lagooned effluent only by surface absorption. Oxidation rates increase as the surface area exposed increases in relation to total volume, hence the conclusion that effluent stabilization occurs more rapidly in lagoons of shallow depth. Stabilization rates in oxidation lagoons can also be increased by means of compressed air diffusion, riffling, turbulence and recirculation of lagoon effluents. The use of the stabilized effluent from a small accelerated treatment unit (activated sludge) has been shown to increase stabilization rates in oxidation lagoons.

A new method, presently under study, for introducing oxygen into lagooned effluents, involves the use of a turbine type mechanical aerator which entraps air by creating a violent churning action and vortex flow. This equipment, in addition to aerating, also acts as a pump and accomplishes some degree of mixing.

It appears well adapted to existing lagoons of shallow depth where oxygen transfer by diffused compressed air is poor. Power requirements per pound of oxygen absorbed indicate this unit to be an efficient aeration device.

Reviewer's comments—The evolution of the oxidation lagoon method for stabilization of pulp and paper mill effluents stemmed from two totally dissimilar approaches to the effluent handling problem, namely, accelerated biological treatment as exemplified by the activated sludge process and the deep, large volume effluent holding basins which were nothing more than their name actually signified. Basic fundamentals developed by the National Council in cooperation with many mills have resulted in a fusion of these two a dissimilar technique from which evolved the oxidation lagoon method for effluent stabilization. The data and information presented by the author indicates that this method affords a promising solution to the problem of pulp and paper mill stabilization. The various techniques described by the author for enhancing oxygen transfer to the lagooned effluents should be useful tools for engineers faced with effluent disposal problems.

TURBINE AERATION AND OTHER METHODS FOR REAERATING STREAMS—A. J. Wiley & B. F. Lueck, Sulphate Pulp Mfrs. Research League.

The authors reviewed the basic conditions and formulae for stream aeration and generally reviewed the various methods, intentional and otherwise, which have resulted in imparting dissolved oxygen to water courses which are deficient either through natural or man-made causes. Cited as methods specifically designed for this purpose were weirs, compressed air diffusion and hydroelectric power turbine aeration.

Weirs have been used in England, Germany and the U.S. for introducing oxygen into rivers with increases up to 4 ppm dissolved oxygen being noted.

Compressed air diffusion, applied on the Flambeau River in Wisconsin since 1943, was only partialy satisfactory with only 0.5 ppm increase in dissolved oxygen being noted. Oxygen absorption efficiencies ranged from 6 to 8% and approached 10% at times.

Hydroelectric power turbine aeration, first suggested, studied and reported in 1955 in Germany, and since applied extensively on the Flambeau, Fox and Wisconsin Rivers (totalling 8 installations) in Wisconsin and other U.S. locations has shown oxygen absorption efficiences ranging from 15 to 26% with dissolved oxygen pick-ups ranging up to 1.6 ppm.

Power costs for compressed air diffusion were found to be $12.85 per ton of oxygen absorbed at the Flambeau River installation. Turbine aeration costs at the same installation were $8.45 per ton of oxygen absorbed. The latter costs are derived on the basis of loss in power output of the turbine when air is introduced to the draft tube. There is substantial evidence that the actual power loss shown on the meter is not the true power loss since less water actually passes through an aerated turbine at any given gate opening, resulting in a water saving. As a result the true power loss is substantially less than is indicated on the meter. Turbine power losses, calculated at other installations, have varied from $3 to $15 per ton of oxygen absorbed.

Based on an assumed absorption of 5 tons of oxygen per 1000 cfs of river flow, compressed air diffusion would require $39,000 in equipment costs for compressors, piping and diffuser plates or tubes plus an estimated $1000 per season for maintenance costs. Contrasted to this, for power turbine aeration, the estimated installation costs would amount to only $2000 with only negligible maintenance costs.

The authors concluded that turbine aeration is the first of a number of possible ways for reaerating oxygen-deficient streams which has been proved feasible as evidence by the significant number of installations of this type. They estimated that the total number of such installations in Wisconsin alone will approach 20 in the near future.

REVIEWER'S COMMENTS—The authors have brought to the attention of pulp and paper industry engineers a newly developed and feasible method for replenishing the dissolved oxygen assets of streams and rivers through turbine aeration.

The presentation of cost data makes this paper particularly significant and quite conclusively shows the advantage of turbine aeration, facilities permitting, over the earlier method of compressed air diffusion for stream reaeration.

That this method is practicable and advantageous is attested to by its rapid acceptance by the pulp and paper industry, particularly in Wisconsin. This marks another pioneering effort of this industry in stream improvement and is another instance of a cooperative project between industry and a state regulatory agency which has worked out to the mutual satisfaction of all concerned.

Lubrication Plan Cuts Costs; A New Approach in Training

By R. Q. CONNER

Reviews and comments on Engineering Conference papers especially written for this magazine

A NEW CHALLENGE IN TOMORROW'S MAINTENANCE—H. P. Evans, C. F. Braun & Co.

REVIEW: Many plants, including new and modern ones, suffer daily from weaknesses in maintenance. Four principles should be applied, emphasizing establishment of a well-defined policy, adequate tooling, combining the centralizing of major facilities and a clear-cut organization applying sound methods. Today's plants are more complex. They call for more skills and sometimes more maintenance but it can be done at low cost if these principles are adopted.

COMMENT: This paper portrays to the paper industry the concepts of plant maintenance which were developed by C. F. Braun & Co. in their own outstanding plants in Alhambra, Calif., and which they were requested to develop also for others who had seen what they had done in their own plants. They have analyzed the needs in plant maintenance and the principles through which they can most economically be obtained. The approach that they have developed to the problem of plant maintenance has much to offer the paper industry.

UP-TO-DATE TRAINING IN PAPER MILLS—H. W. Smith, St. Regis Paper Co., Pensacola, Fla.

REVIEW: Rapidly developing engineering and technical advances means people have to be changed, too. This means changing the reasoning, skill, attitude and knowledge patterns established by many generations of papermaking precedent. This is tough to do. Down-to-earth procedures are recommended.

COMMENT: The paper industry has lagged critically behind many other industries in their approach to developing in their personnel the skills and attitudes required to be able to take advantage of the rapid technological advances being made in industry generally and which are being fed into the paper industry more rapidly each year. This author faces the problem and gives a progressive answer to it as put into effect by one of the leading companies of our industry.

ORGANIZED LUBRICATION—J. A. Box, Jr., lubrication engineer, Gaylord Container Corp., Bogalusa, La.

REVIEW: Worthwhile savings in lubricant cost and bearing life have been made by adequate records and an organized program.

Lubrication needs of the mill were determined by a survey made jointly by the lubricant supplier and plant lubrication enginer. Lubrication charts were posted showing oilers which lubricants should be used. When new lubricants are chosen, the change is not made without explaining to the oiler why. This helps his morale.

Greases are generally bought in 400 lb. drums, transferred into 120 lb. drums for delivery to the plant. Requisitions are originated generally by area supervisors, lubrication engineers, or foremen. The supply department records requisitions so that the charge for the material is made against the proper department. This report shows the cost per dept, and cost/ton of production.

Another report compares charges of one year ago and five years ago. Lubricant waste or the purchase of the wrong lubricant can be detected from these reports.

COMMENT: The author presents a systematic approach to the paper mill lubrication problem as it was worked out at the Gaylord Division of Crown Zellerbach. The author gives examples of the records which are kept, the work schedules as they are given to the oilers, and discusses to some extent the fruits of the conversion to an organized system of lubrication. Any paper mill which does not have a thoroughly organized approach to the lubrication problem will find it a most profitable venture.

Conner, Chairman of Maintenance Sessions, Praises New Systems

R. Q. CONNER, who wrote this review with comments on the maintenance session of the Enginering Conference, was chairman of that event and he has also been chairman of TAPPI's maintenance engineering committee for the past three years. He is plant engineer for the Crossett Paper Mills, Crossett, Ark., and is in charge of both engineering and maintenance in the paper division of The Crossett Co.

Second Biggest Meeting For TAPPI Engineers

There were 796 persons registered for the 14th annual TAPPI Engineering Conference in Pittsburgh in October, including 103 wives or daughters.

This was the second biggest meeting. Three years ago in Boston the record was set—936 registered, including 158 women—the biggest TAPPI meeting ever outside of the New York annual meetings. Two years ago in Cincinnati there were 783 registered, 90 of them women. Last year Portland, Ore., had the record for the longest Engineering Conference —five days—but registration dropped to 560, 171 women.

At Pittsburgh, the ratio of equipment men and non-mill engineers to mill men was about two to one, which was normal.

The 15th Engineering Conference will be in the Robert Meyer Hotel in Jacksonville, Fla., Oct. 24-28, 1960.

Changes in 14 Years

Fourteen years ago some 400 industry engineers touched off the first TAPPI Engineering Conference in Milwaukee's Pfister Hotel. That was in October 1946 and at that time the industry was talking about such new ideas as the pressure headbox, cloth paper (believe it or not) called Kalacloth and made by KVP, yeast production from waste sulfite liquor in Germany and a complete frozen dinner packaged on resin-coated paper plates. The 1946 engineers probed into such problems as digester and atmospheric corrosion, maintenance engineering, economic engineering and the possibility of harnessing radioactive materials for quality control.

The original eight engineering committees have now grown to 14. In 1959 production of paper and paperboard is again headed for a record—probably close to 35 million tons. In 1946, a record was also set—19,277,677 tons.

DRYING

New Pulp Machine; Surveys on Yankees and Testing

By DR. SHERWOOD G. HOLT
Reviews and comments on Engineering Conference papers especially written for this magazine

• TYPE L FLAKT AIRBORNE PULP DRYER—G. E. Jackson, Bowaters Carolina Corp.

REVIEW: High velocity air provides the means of conveying and drying pulp as it makes 17 passes through the dryer, with about one-third of a mile of pulp in the dryer at one time. Tests indicate 1.1 lbs. of steam are used per lb. of water evaporated at rate of 200 to 450 tons per day. Electric motors on 120 fans draw a load of 900 kw. Temperature inside dryer is 200-250° F. There has been no contamination of product due to lubricants or dirt while passing through. Sheet speeds vary from 35 to 95 fpm. An automatic web tension control corrected a problem of pulp web wandering, which occurred when controlled by hand. Threading has been modified to permit full rate start-up.

For more details on this dryer, and photographs, see PULP & PAPER's special report on the new Catawba, S.C., mill of Bowaters in the November issue.

COMMENT: This is a discussion of a new type of dryer designed by Svenska Fläktfabriken, Stockholm. The installation is the first in the United States and it would appear that this is an efficient and compact type of pulp dryer, which should be of considerable interest to pulp producers in this country.

STATIC PRESSING OF WET SHEETS AND FELTS—R. E. White, Villanova University, and F. W. Berdux, C. K. Williams Co.

REVIEW: Pressure-temperature-moisture equilibrium data is obtained by static pressing of wet sheets and felts (three types of each). Migration of water from felt to paper upon release of pressure is clearly indicated.

COMMENT: This is good basic work on the mechanism of water removal by pressing. The data can be interpreted in terms of the capillary structure and elastic properties of the felt and paper sheets. It is hoped that this paper will be followed by a series of dynamic tests and an examination of the mechanisms involved.

Dr. Sherwood G. Holt Chairman Of Drying Session at Pittsburgh

Dr. Holt is manager of the development department, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis. He moved there rather recently from Scott Paper Co., Chester, Pa., where he was chief research engineer in charge of papermaking research. Prior to that he was with E. I. duPont as a research engineer. He earned a ph.d., a master's and an m. e. degree at Cornell University. He is the chairman of TAPPI's drying committee.

SURVEY OF NON-DESTRUCTIVE TESTING METHODS—D. M. McCutcheon, Westinghouse Corp., Atomic Power Division.

REVIEW: Increases in operating stresses and reduction in safety factors of many components and systems in plant equipment have been made possible by proper application of non-destructive testing techniques. These same inspection methods are applicable to old equipment to evaluate probable occurrence of progressive failures. Problems involved in material failures are reviewed with emphasis on non-destructive methods of evaluating equipment.

COMMENT: This paper was an outcome of a request by the TAPPI drying committee for up-to-date information on non-destructive testing methods which might be useful in the pulp and paper industry. The survey discloses methods which have found wide application, particularly in the atomic power field, which could be usefully applied to the pulp and paper industry's equipment.

YANKEE DRYER PERFORMANCE EVALUATION ON PROJECT NO. 505.—Les G. Janett, vice pres. and western manager, J. O. Ross Engineering Corp., Mt. Prospect, Ill.

REVIEW: The drying rates on Yankee dryers have been increased very markedly with the advent of high pressure dryers having high strength cast iron shells. Questionnaire data from mills covers more than 50 Yankee machines making tissues, as well as machine glaze and heavier weight sheets. Plotted curves give evaporation information as a function of steam pressure. Influence of nip pressures, air systems, arc of contact and other variables are covered.

COMMENT: Mr. Janett's report was the first on a project undertaken by the TAPPI Engineering Division drying committee to obtain up-to-date information on drying rates with high pressure dryers. Yankees were chosen for this first report because of the wide interest in this type of equipment and the sizable advances that have been made since the last TAPPI survey of drying rates. Information on other types of dryers will be published as soon as it can be collected and analyzed.

Patch MacBrayne

Dan Patch Honored

Surprise gift is made to Mr. Patch of Morton C. Tuttle Co. for his many years of service to TAPPI's Industrial Engineering and Materials Handling Committee. He has been to every engineering meeting since 1946 and is only original man left on committee. Making presentation is JAMES M. MACBRAYNE, mgr., general services div., Union Bag-Camp Paper Corp.

Essential Really to Believe in Scientific Management

By B. C. KENDALL
Reviews and comments on Engineering Conference papers especially written for this magazine

• DO WE REALLY MEAN IT? —J. E. Angle, vice pres. in charge of industrial engineering, U.S. Steel Corp.

REVIEW: In other words do we really subscribe to the principles of scientific management, principally to constant improvement of all phases of business as this is one of the main concepts that keep businesses "out in front."

In order to do this, Mr. Angle stresses the point that management must not profess to believe in scientific management as such, but to actually subscribe to it and practice these principles. He further pointed out that management has one of the greatest tools available to do this . . . the industrial engineer with his wide technical background and skills based upon thorough indoctrination and engineering precepts. Management cannot obtain benefits from the industrial engineer without accepting his recommendations and installing them. The industrial engineer must also be part of the nucleus of an operations research group and the industrial engineering effort must be integrated into the whole management program.

COMMENT: Mr. Angle's talk was exceptionally well received from all indications that I had from innumerable members of the audience. In fact, the most common remark was that there was really so much "meat" in his talk that they would like to have copies.

BROKE HANDLING AT GLATFELTER'S—R. D. Owen, P. H. Glatfelter Co.

REVIEW: Disposal of broke is especially critical on a high speed quality paper machine such as the 188-in. Rice Barton installation at Glatfelter. With capacity at 1500 fpm, and future potential of 2000 fpm, designers were aware that failure to solve the broke handling problem would be costly.

A distinct advantage was obtained in a decision to create the "basement" at ground elevation and to place the paper machine on the floor above. Although chaneling of broke to the basement for disposal was not new, this design did provide ample space and easy access.

COMMENT: Bob Owen's talk was extremely interesting in that it brought up-to-date many present-day methods of handling broke. He presented many problems and difficulties that Glatfelter experienced and recommended changes for other companies to follow in future types of design. Primary problem of broke handling at machines is that of handling the broke produced during breakdown, threading operations or off-quality runs. Designing equipment that will satisfactorily operate at these peak periods as well as handle the accumulation in between time is a problem that is very often slighted engineering-wise and there is undoubtedly a great deal of work to be done along this line.

Heads Industrial Engineering & Materials Handling Committee

B. C. KENDALL, who chairmanned this TAPPI session, is assistant manager, industrial engineering, Crown Zellerbach Corp., San Francisco. Before moving to CZ headquarters, he was division industrial engineer for its Western Waxide Div., Previously he was asst. to the manager of a small utility and was with Food Machinery Corp. as engineer, time study engineer, production mgr. and plant supt.

Veteran Engineers Face "Rude Awakening" Unless They Study, Says Ray Curtis

Veteran engineers of this industry were warned at the Pittsburgh Engineering Conference that they are due for a "rude awakening" if they think their experience alone "will hold the line against the challenge of the new generation with their shiny new academic tools."

John Ray Curtis, director of operations research, Scott Paper Co., retiring chairman of the Engineering Division of TAPPI, spoke this warning in his "swan song" at the luncheon.

"This industry is going to move ahead and if outside specialists are required to do your job and mine for us, the industry will not hesitate to call upon them," he said.

"Do you subscribe to magazines devoted to the presentation of technical developments? They cost no more than the literature you pick up in the airport when you are traveling.

"How much of your day is really effective? Efficient use of time requires two maior ingredients: The ability to plan ahead and the ability to get started. Your experience is the indispensable ingredient for tempering the solutions developed by this new generation of engineers; however, you must possess at least a general knowledge of the subject matter. Experience plus knowledge is an unbeatable combination.

"One of the primary responsibilities of every engineer is to use a 'little' to best advantage, to simplify designs and to size equipment properly. The engineer is frequently at odds with the papermaker who insists upon spinning all steam and water valves wide open, reasoning 'If a little is good, a lot is much better.'

"I am sure that many of you have enjoyed the experience of spending an hour in study and preparation before a meeting and then finding yourself the best informed person present."

J. W. "Bumps" Hemphill, a founder of the Engineering Division and senior member of its staff advisory committee, presented Mr. Curtis with a clock inscribed with the committee's names.

4th Full Day Pulp and Paper Conference Set for Jan. 21 at Western Michigan U.

"Advances in Mechanical Treatment of Fibers" is the subject for the fourth annual Pulp and Paper Conference at Western Michigan University, Kalamazoo, to be held Thurs., Jan. 21, in the Paper Industry Laboratories.

Opening the program at 9:30 a.m., J. A. Van den Akker, senior research associate in physics, The Institute of Paper Chemistry, will speak on "Fundamental Aspects of Fiber Treatment," followed by Dr. J. R. Fanselow of the WMU faculty on "Use of the Product of Burst and Tear Values as an Index of Fiber and Refiner Evaluation," and W. R. Haselton, vice pres. and gen. mgr. of Rhinelander Paper Co., speaking on "Beating and Refining for Glassine and Greaseproof Papers."

At the luncheon, Bert H. Cooper, vice pres. of Kalamazoo Paper Co. and chairman of the Advisory Committee on Paper Technology at the university, will introduce Albert W. Wilson, the editor of PULP & PAPER and of PULP & PAPER INTERNATIONAL, who will speak on "What Is Happening in the European Paper Industry."

The afternoon session opens with two talks: R. W. Hisey, tech. director of S. D. Warren Co., Cumberland Mills, Me., on "Mechanical Treatment of Fibers for Book Papers," and A. T. Luey, exec. secy., Boxboard Research and Development Assn., on "Treatment of Reused Fibers for Cylinder Machines."

As a finale, Mr. Hisey will moderate a panel of the speakers on "Approaches to the Comparative Evaluation of Refiner Performance."

During the evening the annual Papermakers' Get-together will be held at Harris Hotel in Kalamazoo, jointly sponsored by PIMA and TAPPI.

Prof. S. G. MASON

Recent Research Findings Subject of Coast Seminar

Professor S. G. Mason, head of physical chemistry div. at Pulp & Paper Research Institute of Canada, and research associate of McGill University chemistry dept., recently conducted seminars for Pacific Section, TAPPI, in Portland, Ore., and in Seattle, two days in each city.

His presentations concerned "recent researches on the physics and chemistry of paper making", including: Changes in cellulose and paper caused by drying, properties of suspensions of spheres, rods and fibers, significance of pulp-fiber flexibility and a technique for measuring fiber flexibility, properties of dilute pulp suspensions and their significance in papermaking.

As guest speaker at Pacific TAPPI's fall meeting, in Seattle, Dr. Mason called attention to the fact that the action of fibers while in suspension is of distinct importance in various handling and processing stages. Methods for measuring pulp fibers in suspension is "very complicated indeed."

The behavior properties of pulp in suspension was attributed to such factors as elongation, roughness and flexibility. The fibers tend to interlace and flocculate, forming a connected structure.

In reporting on the flexibility of fibers, Dr. Mason reviewed progress that has been achieved in developing a system for measuring fiber bending. He indicated that spruce sulfite fibers tend to buckle after being bent to about 45°. They tend to subsequently straighten out. Red alder fiber is more flexible bending to about 360° (in a non-uniform bend), later straightening. Other fibers tend to take the form of a helix, never straightening but tending to bend in segments.

As lignin is removed from fiber, the incidence of stiffness drops, flexibility and snaky characteristics increase.

Williamsburg for Southern Supts.

Historic Williamsburg, Va., one of the nation's most beautiful cities, will be the scene of next fall's Southern and Southeastern Superintendents' meetings. Dave Jones of St. Regis Paper Co., Pensacola, will be chairman of the Southern division and John S. Halsey, of Albemarle Paper Co. in Richmond, Va., will head up Southeastern activities.

Larry Smith Retires from Publishing To Head Fiberglass Boat Firm in West

Lawrence K. (Larry) Smith has announced his retirement as vice president of Miller Freeman Publications, Inc., and has accepted a new position in industry as the president of Bell Boy Co., Bellingham, Wash., manufacturers of fiberglass boats. It formerly was known as Bell Boy Inc., division of Bellingham Shipyards Co.

Mr. Smith's son, David L. Smith, who has been in the sales department for Longview Fibre Co. for the past several years, also is joining Bell Boy in a sales capacity and he will be treasurer of the company. Bell Boy boats are sold throughout western U.S. and under license in Australia.

Mr. and Mrs. L. K. Smith plan to continue their residence at 1330 Jones St., San Francisco, Calif.

Mr. Smith has served in a managerial capacity with PULP & PAPER, PULP & PAPER INTERNATIONAL, THE LUMBERMAN, THE TIMBERMAN and other Miller Freeman magazines for over 30 years.

He has a host of friends in the pulp and paper industry throughout the United States, Canada and other countries and was a founder of PULP & PAPER when it was first published in 1927. He also was very close to early development of some of the biggest companies in this industry. He spearheaded PULP & PAPER's remarkably successful development and expansion as a national magazine, achieving the largest paid circulation of any journal in the field, and its establishment of national offices in Chicago and New York and regional offices in New Orleans and later in Atlanta, in Canada and in the West. He was also a leading participant in the founding this past year of its companion magazine, PULP & PAPER INTERNATIONAL, which circulates to virtually all pulp and paper mills in the world.

Mr. Smith was born in northern New York but spent his youth in Anacortes, Wash., a short distance from where the Bell Boy firm is located. His father was a physician there. Larry Smith was graduated from the University of Washington where he was an outstanding player on the famous Gil Dobie-coached football teams there. After a short period in the fisheries industry in Alaska he joined Miller Freeman Publications in Seattle.

World Needs to 1975

Industry will meet challenge to 1965, Rome conferees decide, but demand will more than double by 1975. What then?

—Rome

● **The average person in India consumes annually less than enough newsprint to make up one copy of *"The Times"* of London. In Uganda, the per-person consumption of newsprint is equal to approximately one-half of a copy of *"Le Figaro"* of Paris. In Egypt, it is less than eight copies of London's *"Daily Express"*.**

The average Portuguese consumes 10 times as much newsprint as the average Indian, the Finn more than 50 times as much, the Swede 100 times as much and the resident of the United States of America about 200 times as much.

World consumption of paper and paperboard has doubled within the past 20 years, passing from 28 million metric tons in 1938 to over 62 millions in 1958. On the basis of prospective population growth and general economic development, it should more than double within the next 15 years.

The above are assessments put forward by many leading experts of this industry attending the World Consultation on Pulp and Paper Demand, Supply and Trade, recently held in Rome under the auspices of the Food and Agriculture Organization (FAO) of the United Nations.

They estimate a worldwide production of paper and paperboard totalling 88 million metric tons by 1965 (of which 17 millions would be newsprint) and 134 million tons by 1975 (26 millions being newsprint).

Domestic consumption in North America alone would then reach 57 million tons (10 million tons being newsprint) and 27 million in Western Europe (6 million tons being newsprint). Industry has plans for expanding its capacity which will take care of most of the increase expected up to 1965, it was reported at this meeting.

As for raw materials, the forests of the world (the main source) should be more than adequate to meet the additional drain. To produce the additional pulp needed by 1975, roughly 280 million solid cubic meters more roundwood will be required if the pulp is manufactured from wood alone; this corresponds to about one-third of the current removals of all wood for industrial use. But, the experts pointed out, this global view of the problem is unrealistic as in some parts of the world the limits of sustained yields have already been reached while in others these limits may be reached in the foreseeable future.

The Consultation noted that supply difficulties already exist or may arise in the foreseeable future in Eastern Europe, Near and Middle East and in some parts of the Far East. Even in Western Europe sustained efforts will be needed if difficulties are to be avoided. It emphasized the importance of making long-term plans to secure the industry's future needs in raw materials.

To meet rising need substantial investment will be required, averaging (at current prices) more than a billion dollars annually to 1965 and perhaps 1½ billion dollars annually in the decade 1965-1975. It is in the deficit regions that investment needs will rise most rapidly, and in the developing countries there will be both scope and need for investment from overseas.

Today, only two regions, North America and Western Europe, are net exporters; together they represent four-fifths of world production. All other regions depend in varying degrees on supplies from these two regions, ranging from one-third of the domestic consumption in the case of Latin America to two-thirds in the case of Africa.

These other regions have ambitious plans for developing their pulp and paper industries. Already production has risen sharply over the last decade, but even so their net imports of paper have risen by 40% and those of pulp have doubled. These regions cannot afford an unlimited increase in paper imports, it was stated. This implies that vigorous efforts to raise domestic supplies will be needed if they are not to restrict their consumption. Shortage of paper could frustrate their economic, educational and social progress.

The Consultation agreed on the need for a marginal reserve capacity if market stability is to be assured but there was a sharp debate on what this should be—ranging from 5% to 20% oversupply of woodpulp. All-out capacity is unlikely to be realized in practice and it was said there is need for a cushion to absorb temporary unexpected increases in demand as well as unforeseen setbacks in the production schedule.

There have been times since the war when the industry in several countries has operated for prolonged

ROBERT M. FOWLER (left), president, Canadian Pulp and Paper Assn., and chairman of Rome conference, and EGON GLESINGER, director, FAO's Forestry and Forest Products Division.

periods at close to maximum capacity. This has encouraged investors and in 1958 had brought into existence through the world roughly 7½ million tons more capacity than was needed to satisfy consumption. It takes several years for pulp and paper mill to be planned, installed and get into production. Had there not been a setback to general economic expansion in 1957/58—had demand grown normally—the excess today would have been 4½ million tons—still a substantial figure, according to Rome experts.

The Consultation reviewed expansion plans in all regions of the world and noted that plans already afoot were sufficient to meet the major part of the increase in demand which may be expected up to 1965.

The Consultation agreed on the need to keep both demand trends and capacity development under continuous review.

International trade in pulp and paper has grown to the point where, at close on 3 billion dollars, it accounts for over 3% by value of total world trade; this compares with less than 5% for iron and steel.

The total level of world trade in woodpulp now stands at 7½ million tons (4½ million tons in 1948) and that in paper and board has reached 10½ million tons (6½ million tons in 1948).

In recent years the U.S.S.R. and Eastern Europe have expanded their trade in pulp and paper, exporting close on 300,000 tons of both pulp and paper in 1958; these exports were balanced by imports of roughly the same order. Domestic requirements are rising rapidly in these regions and the Consultation, on the basis of information communicated, did not think that export availabilities would rise in these areas in the coming years on a scale likely to affect world market stability.

The Consultation, which was attended by 28 experts and advisers from 16 countries, elected, as chairman, Robert M. Fowler, president of the Canadian Pulp and Paper Association.

(From left) Motoki Matsunaga (Japan), executive director, Japan Paper & Pulp Assn.; Sir Herbert Hutchinson (UK), director general, British Paper and Board Makers' Assn.; Lars Sjunnesson (Sweden), manager, director, Swedish Cellulose Assn.; Ewert Landberg (Sweden), managing director, Swedish Paper Mills Assn.; Olav Trygve Jarlsby (Norway), managing director, Saugbrugsföreningen.

(From left) Robert O'Connor (USA), Executive secretary, American Paper and Pulp Assn.; P. Lawson Turcotte (USA), president, Puget Sound Pulp and Timber Co.; James L. Ritchie (USA), executive director, U. S. Pulp Producers Assn. Inc.; Francis Seymour Laughton (So. Africa) under-secretary for Forestry.

Contaminants Spotlighted at 4th TAPPI Deinking Conference

● Troubles are increasing for the industry's estimated 46 deinking paper mills. The villain is the industry's own use of difficult-to-defiber materials that it employs to enhance its products.

An estimated 130 mill men and suppliers attended TAPPI's Fourth Deinking Conference at the Roger Smith Hotel, Holyoke, Mass., October 8 and 9. Two indications of the industry's interest were the large percentage of operating men present and the scheduling of future deinking conferences on an annual basis.

Actually, the term "deinking" is a misnomer as most papers discussed re-use of another misnomer, "waste paper." Many prefer the term "secondary fiber" or "old paper." Waste, they argue, means without value, and these fibers definitely are of value. The industry for many years has sought a more appropriate term.

Multiplying the Headaches

Because of the many headaches involved in re-working secondary fibers containing additives, plastics, etc., many mills are asking whether it is worth the trouble. Secondary fiber is cheaper; but if there is undetected contaminant in the stock, the mill may not find it out until too late. Even pencil rubber erasures will show up as specks on the finished paper or paperboard. Some deinking mills strictly forbid their employes and mill visitors to chew gum.

Growth in secondary fiber use has been stymied partly because of the sometimes lack of uniformity in stock sold to paper mills. Rather than tackle the uncertainties attendant to using secondary fibers, more and more mills prefer to purchase virgin pulp. This is especially true in today's market, where there is an oversupply of market pulp.

Program of Education

To combat these problems, the Waste Paper Utilization Council headed by Ralph W. Kumler conducts a program to educate generators of wastepaper. The Council also sponsors the use of symbols to denote presence of certain types of prohibited or difficult-to-defiber materials in the paper.

WHAT'S NEW AT CASCADE KRAFT

—a special report

BOISE CASCADE CORP. EXPANDS its widely diversified manufacture to include pulp-paper with start-up of subsidiary Cascade Kraft Corp.'s 150-ton per-day mill at Wallula, Wash., utilizing sawmill-residue chips.

(1) Chip receiving station; (2) open chip storage; (3) transport system delivers chips from storage directly into digesters; (4) pulp mill; (5) machine room; (6) warehouse; (7) shipping; (8) recovery boiler; (9) power boiler; (10) causticizing; (11) shop.

Design for Maximum Use

Four unusual features: 1. Chip handling by 2 men; 2. Source of quality water; 3. Built on Vibrofloted sand; 4. Its own general contractor

By LOUIS H. BLACKERBY
Western Editor, PULP & PAPER

—Wallula, Wash.

• Situated in what might appropriately be referred to as one of Western America's wide open spaces, the new 150-ton mill of Cascade Kraft Corp. is essentially a wood utilization factory. As such, it forms the basic link by which the parent organization can achieve one of the objectives for which it was formed—maximum utilization of harvested forest crops.

Boise Cascade Corp., established in 1957 through the merger of Boise Payette Lumber Co. and Cascade Lumber Co. and their subsidiaries (with the recent addition of Valsetz Lumber Co. and Templeton Lumber Co.), operates 12 sawmills producing some 300,000,000 bd. ft. of lumber annually. Although residue wood from some of these plants has been converted to market pulp chips and sold to pulp mills over the past several years, other of the firm's sawmills were less favorably located in regard to chip markets.

In selecting the site of the recently-built pulp-paperboard mill—Boise Cascade's initial entry into the production of these products—the location of sawmills (including some not owned by the company) was a prime determining factor. The mill was built near Wallula at a location favorably situated for obtaining sawmill residue chips from southern Washington, western Idaho and northern Oregon.

Beneficial effects throughout the chip-source area—estimated as approximating the size of the state of Massachusetts—will be of long, continuing duration. Creation of this chip market provides improved economic operating conditions for the participating sawmills, increases the effective yield from the region's forests, improves and stabilizes the economy of participating communities.

Some independent lumber producers previously had no choice but to treat mill residues as waste and dis-

pose of the material at cost have already installed facilities for converting their clean, solid by-product wood into chips for delivery to the pulp mill. Such was not previously economically feasible.

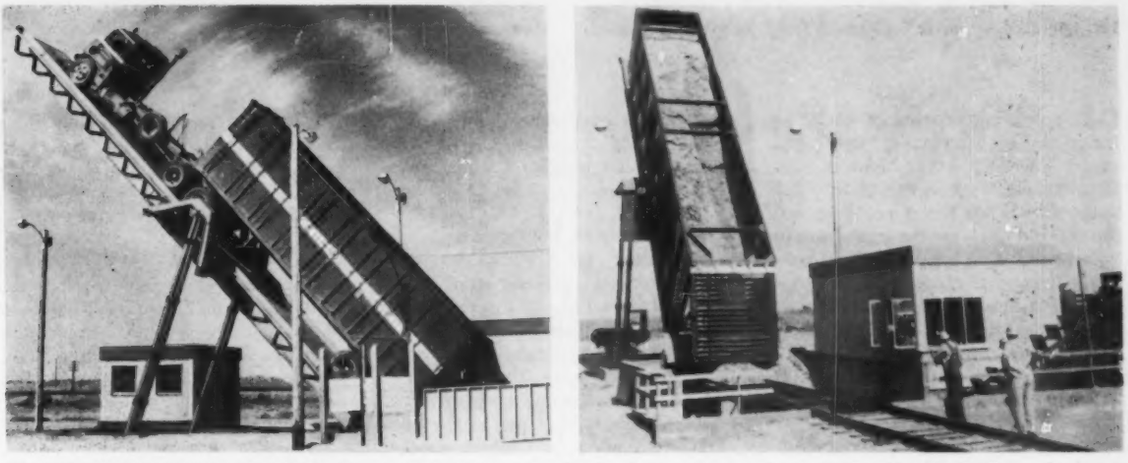
Processwise, this modern kraft mill tends to be small, of compact design and is for the most part quite representative of mills of its type except for three specific departures: (1) The handling of chips from point of arrival until charged into the digesters differs markedly from other mills; (2) the plant's water supply system is unusual, and (3) preparation of the ground on which to build the plant structures was unique.

Not Easy to Find

Don't expect to find Wallula, Wash., on all existing maps—unless they are Northern Pacific or Union Pacific railroad maps—as there wasn't much there except water, highway and rail arterials until Boise Cascade Corp. built its Cascade Kraft Corp. plant. This recently-turned-manufacturing community sits on the long back of the Columbia River where it turns from a southerly to westerly flow.

4th in Inland Empire

This is only the fourth pulp and paper mill to be built in what is broadly termed the "Inland Empire"—eastern Washington and Oregon, Idaho and western Montana—where there are vast stands of timber. The others are Inland Empire Paper Co., Spokane; Potlatch Forests, Lewiston, Idaho, and Waldorf Paper Products of Montana, Missoula, Mont. There is little doubt but that there will be more of them in the future.



58° TILT FOR TRUCK-TRAILER (l) OR RAILCAR (r) unloads chips to recessed pit. Hydraulic Air-O-Flex unloader is push button-controlled from building at right.

CASCADE KRAFT:

1. Chip Handling: A Two-Man Operation

All chips are delivered, so the mill has no woodroom. Of the last six pulp mills built in the western states, only one includes a wood mill as a component part.

A significant factor at Cascade Kraft is that chips arriving at the plant are unloaded, transported to outside storage and from there carried directly into the digesters by an exceptionally effective and efficient system. This chip-handling sequence is carried out by a two-man staff.

The outside operator attends to the unloading and storage of delivered chips as they arrive at the plant. He also keeps the "from-storage" chip recovery unit supplied. The digester operator, remaining in the digester room, controls the flow of chips directly from storage to the digester room and into the digester via a high-pressure pneumatic transport line.

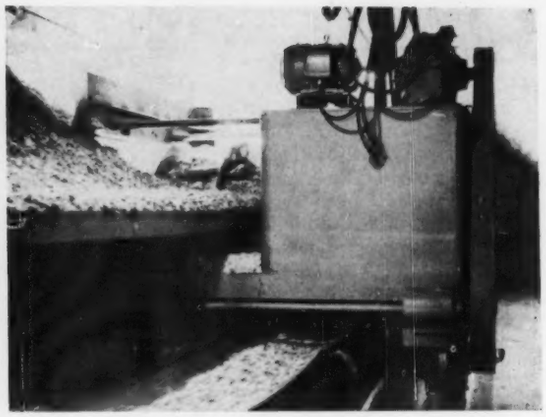
How the System Works

Chips, arriving both by rail car and highway truck-trailers, are unloaded by a hydraulic-lift dumper that tilts to 58° by elevating one end. This discharges the chips out the rear of the carrier unit, via a swinging top-hinged door, into a receiving hopper. The chip-receiving system has capacity for accommodating 60 units per hour.

Loaded carrier units arriving at the plant—rail cars at night, truck-trailers during the day—move directly onto the horizontal platform of the Air-O-Flex unloader (supplied by Larson and Baardson, Inc.). The lift end of the carrier is secured to the platform and the other end butted against a holding chock that retracts out of the way when not used to secure carrier vehicles during the unloading process.

Moving Chips from Storage to Digester

STORED CHIPS EMERGE from concrete tunnel to final Rader Pneumatic high-pressure system for discharge directly into digesters. Blade-equipped D4 Caterpillar tractor, operated by outside chipman (top), keeps pile leveled.



TWO SCREW CONVEYORS of Impco track-mounted traveling feeder transfer chips from shelf on open side of tunnel to troughing belt leading to Rader Pneumatic conveyor.

Chip unloading consists of elevating the platform carrying a loaded rail car, or a trailer with its highway tractor attached, to an incline of 58°. The chips slide down the steep slope, out the hinged end of the chip-hauling vehicle, into a pit hopper. A flight conveyor transports chips from the hopper over a Stearns magnetic pulley to the feeder of a Rader Pneumatics high-pressure conveyor system delivering directly to outside storage 500 ft. away.

The unloading platform, elevated by means of two four-section telescoping hydraulic-lift cylinders, is push button-controlled from the operator's station in a small building adjacent to the unloader. The operator, while at the control panel, can observe the action of the various chip-receiving components under his jurisdiction.

A Vickers hydraulics unit using two 25-hp motors provides power for lifting the platform, rail car (or truck-trailer) and chips. The hydraulics component working in conjunction with the telescoping lift cylinders can raise the loaded platform to maximum slope in 2½ min. As a means of making sure the carrier unit is entirely emptied of chips, the operator jostles the elevated platform before lowering it to horizontal.

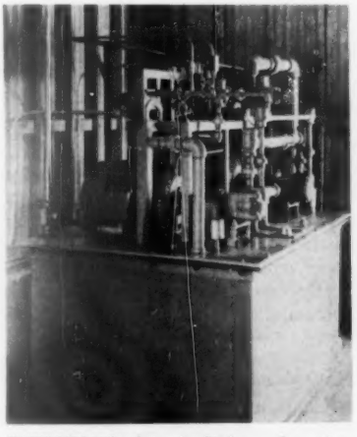
This installation is equipped for rapidly ascertaining the weights of chips received. Loaded and tare weight of each vehicle moving onto the dumper platform is logged by means of a recording type 100-ton capacity Howe scale. Samples taken from each chipload are dried in a lab type drying oven housed in the unloading building as a means of computing official weight of chips on a bone-dry basis.

Directly to Open Storage

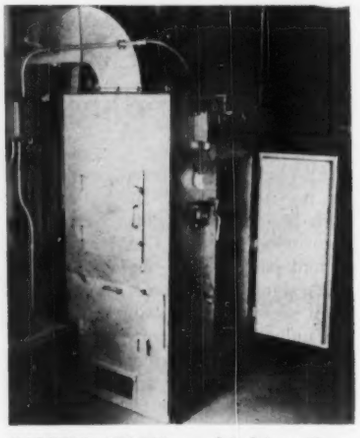
Depending on the species and moisture content, arriving chips range in weight from 19 to 23 lbs. per cu. ft. When operating on heavier chips at the unloading system's 60-unit per hour design capacity, the Rader system delivers in-coming chips directly to the outside storage pile at the rate of 2.3 tons per min. Chips from the feeder are conveyed in an underground line to the chip storage pile, up the side of the pile and distributed by means of an adjustable deflector. The line can be extended to various locations on the pile by means of quick disconnect sections of portable pipe to extend the pile or to discharge directly to the reclaim conveyor.

From Storage into Digesters

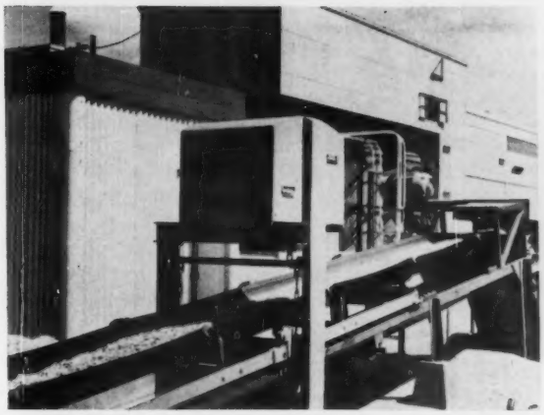
The open storage pile—which is expected to normally contain 15,000 to 20,000 units—is located over a concrete tunnel that has openings along one side. Chips flow by gravity into these openings onto a concrete shelf extending along the open side of the tunnel. Two horizontal screws of a track-mounted Impco feeder extend over this shelf and transfer chips from the shelf to a belt conveyor at a metered rate of 60 units per hour. The



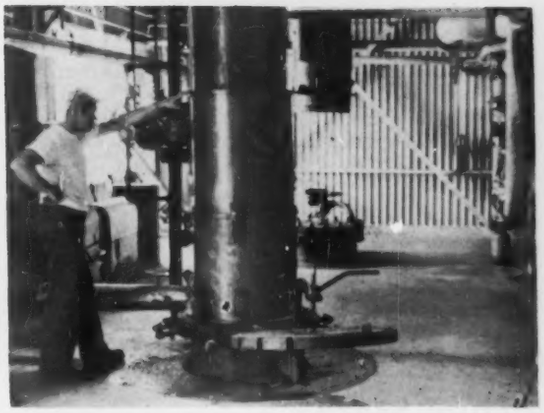
"MUSCLE" for inclining dumping platform is Vickers hydraulic unit.



SAMPLE CHIPS are dried in a Drew Engineering electric oven to determine weight on bone-dry basis.



MEASURING WEIGHT OF CHIPS in each digester charge as they emerge from tunnel via belt delivering to Rader Pneumatic system feeder (Merrick weightometer).



PNEUMATIC SYSTEM CHARGES chips directly into one of three Chicago Bridge digesters on arrival from open storage pile.

feeder travels longitudinally through the tunnel removing chips from the shelf as it moves along. The receiving-belt installation, equipped with a Merrick recording weightometer, conveys chips recovered from storage to a second Rader high-pressure system that delivers the chips directly to the three Chicago Bridge digesters. The tonnage delivered by the storage-to-digester system objectively shows on a panel indicator in the digester operating room. With this information, the flow of liquor to the digester is controlled to get a uniform mix and maximum tonnage in each cook.

The chip line runs underground from the feeder to the digester building, where it rises to a three-way valve at the digester floor for distributing the chips to any of three cyclones, each mounted directly over a digester. The cyclone discharge units have counterweighted telescoping sleeves. These attach to digester tops for charging and readily clear the covers when in retracted position. Chips can be transported from storage for direct digester charging at rates as high as 2.5 tons per min.

Although the second of the two Rader systems is panel-controlled from the digester room, emergency controls are installed in the tunnel extending beneath the storage pile. The operator tending chip storage, in addition to operating the unloading and to-storage transport system, keeps the outside pile leveled off and chips flowing to the recovery system. He also polices the entire storage area, including equipment.

CASCADE KRAFT:

2. Unique Source for High Quality Water

To obtain clean sand-filtered Columbia River water, Cascade Kraft uses a Ranney horizontal water collector. In so doing it becomes one of a half-dozen plants of the industry in North America equipped to take advantage of local water conditions in this manner. Where conditions are suitable, the system is considered to be most satisfactory.

Although the plant site borders on impoundment of the Columbia behind McNary Dam, getting suitable process water in adequate supply presented some significant problems. Water obtained directly from the river would require expensive treatment before it could be used for mill processes because of suspended matter, silt and organic impurities.

Investigating the possibility of developing a naturally-filtered supply resulted in installing the Ranney system. A hydrogeological survey, made prior to deciding on what sort of system should be used, disclosed sand-gravel formation underlying the plant area to a depth of 38 ft. Also significant, this formation hydraulically connects with the river.

A reinforced concrete caisson—13-ft. inside dia. with 18-in. walls—was sunk to a depth of 39 ft. below ground surface and a water-tight concrete plug poured to form the bottom of this component. Eleven laterals of 8-in. inside dia. screen pipe containing slots ⅝ in. wide by 2 in. long were projected horizontally from the caisson at a depth of 25 ft. below river level. These lines, ranging in length from 22 to 73 ft., have total length of 500 ft.

In the process of extending laterals from the caisson the Ranney installation involved removing sand and small gravel in the path of the projected pipe. This, with the amount of sand subsequently removed by "washing out," accounts for total removal of 3 to 7 cu. ft. of fine-to-small aggregate per lineal foot of laterals.

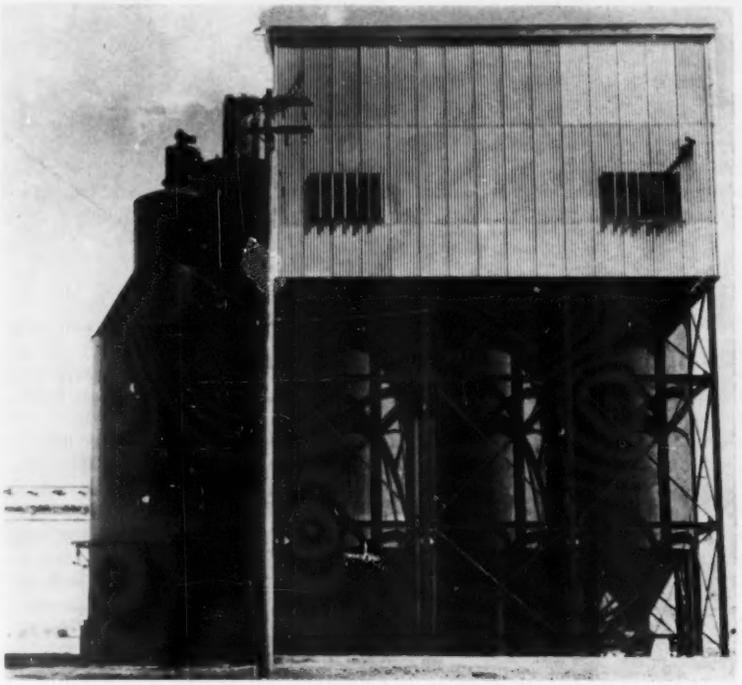
Each line has been equipped with a gate valve controlled from the pump house setting over the caisson. Two 250-hp Fairbanks, Morse pumps—an electrically-powered main pump and

a diesel-driven auxiliary—provide the entire plant, including fire protection, with water from the Ranney well.

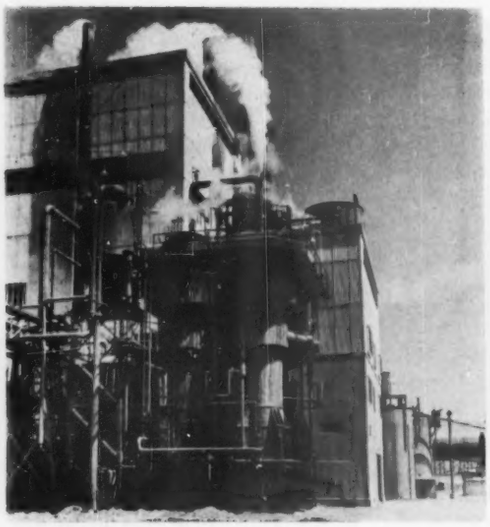
The result has been a proven source for 4,500,000 gpd of high-quality water that has not required chemical treatment to date. Facilities for light chemical treatment may yet be added to overcome a moderate tendency toward slime formation in the water system.

The fact that slime can become a factor at this uppermost Columbia River pulp mill is another indication that investigators should seek more basic contributors than pulp mills as the source of slime build-up in the lower river region. As pointed out at a U.S. Public Health Service meeting concerning Columbia River problems, significant factors contributing to slime growth in this stream include increased water temperature resulting from the construction of dams that retard the flow; the Hanford atomic works, which uses huge quantities of river water for cooling purposes, and climatological modifications. Other non-industrial contributions to slime growth brought out at the hearing include the area's population build-up and continuous increase in the application of agricultural fertilizer.

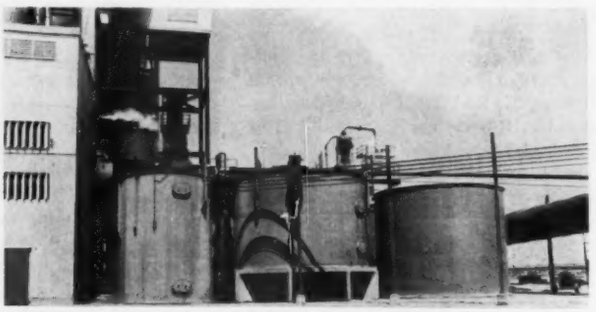
CASCADE KRAFT
Picture Story of a Pulp Mill



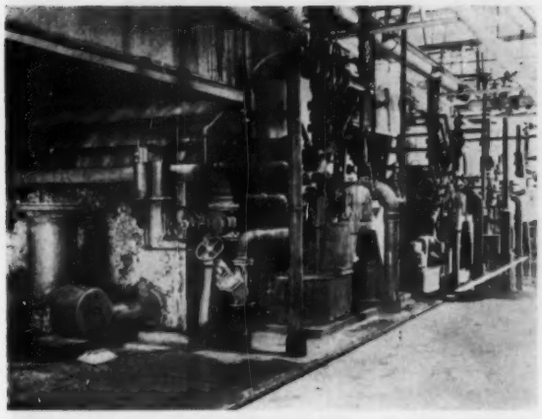
COOKING CHIPS in three 3800-cu. ft. Chicago Bridge digesters (right). Flat-bottom blow tank (left) designed by A. H. Lundberg Inc. as first of its type; built by Hydraulic Supply.



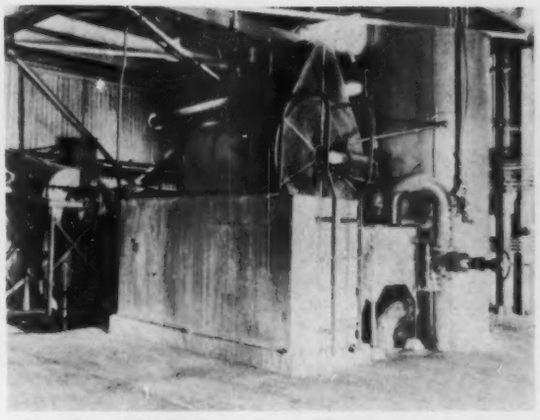
ECONOMICAL CHEMICAL RECOVERY and power generation by B & W recovery boiler (left) and gas-fired power boiler furnished by C. C. Moore & Co., Engineers. Venturi scrubber combines fly ash collection and direct-contact evaporation of black liquor in recovery process of 200,000-lb. per day capacity black liquor solids generating 260 psi 575° F steam. Power boiler rated at 140,000 lbs. 260 psi 500° F steam per hr. Quad-effect Swenson evaporator in foreground.



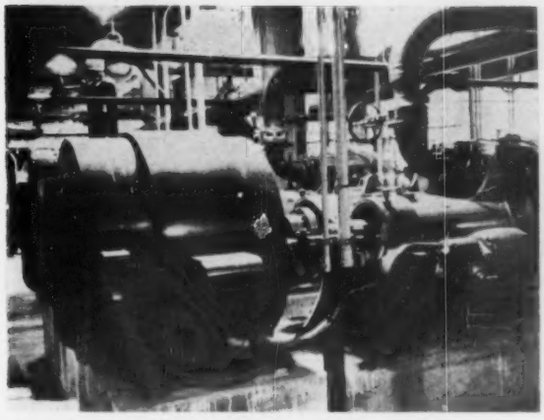
RECAUSTICIZING SECTION of Dorr-Oliver system, using tanks fabricated and installed by Hydraulic Supply.



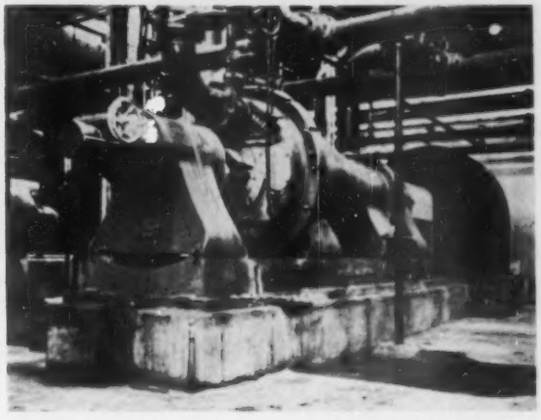
STOCK FROM BLOW TANK goes to Impco preknotter (out of photo at left), then to these two 9 x 16-ft. Swenson-Nyman brown stock washers, and . . .



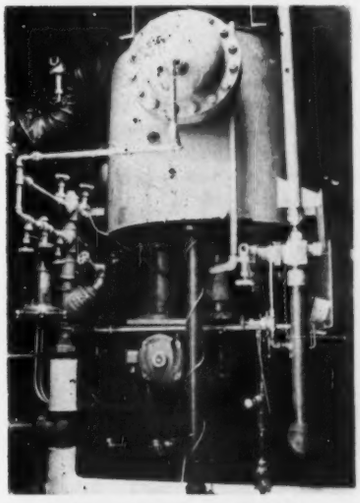
AFTER WASHING, to Cowan Mark A primary screen (foreground) and to Swenson decker. Rejects from Trimbey secondary screen feed to Brinkley dewatering screen at left.



STOCK REFINING. (Left) Two of four Double D Jones refiners, each powered by 450-hp Westinghouse motor.



(Right) Final refining by Jones Majestic jordan driven by 400-hp Westinghouse motor.



TUCKED INSIDE SHELF beneath storage compartment of rosin storage tank is Hercules automatic rosin size emulsifier.

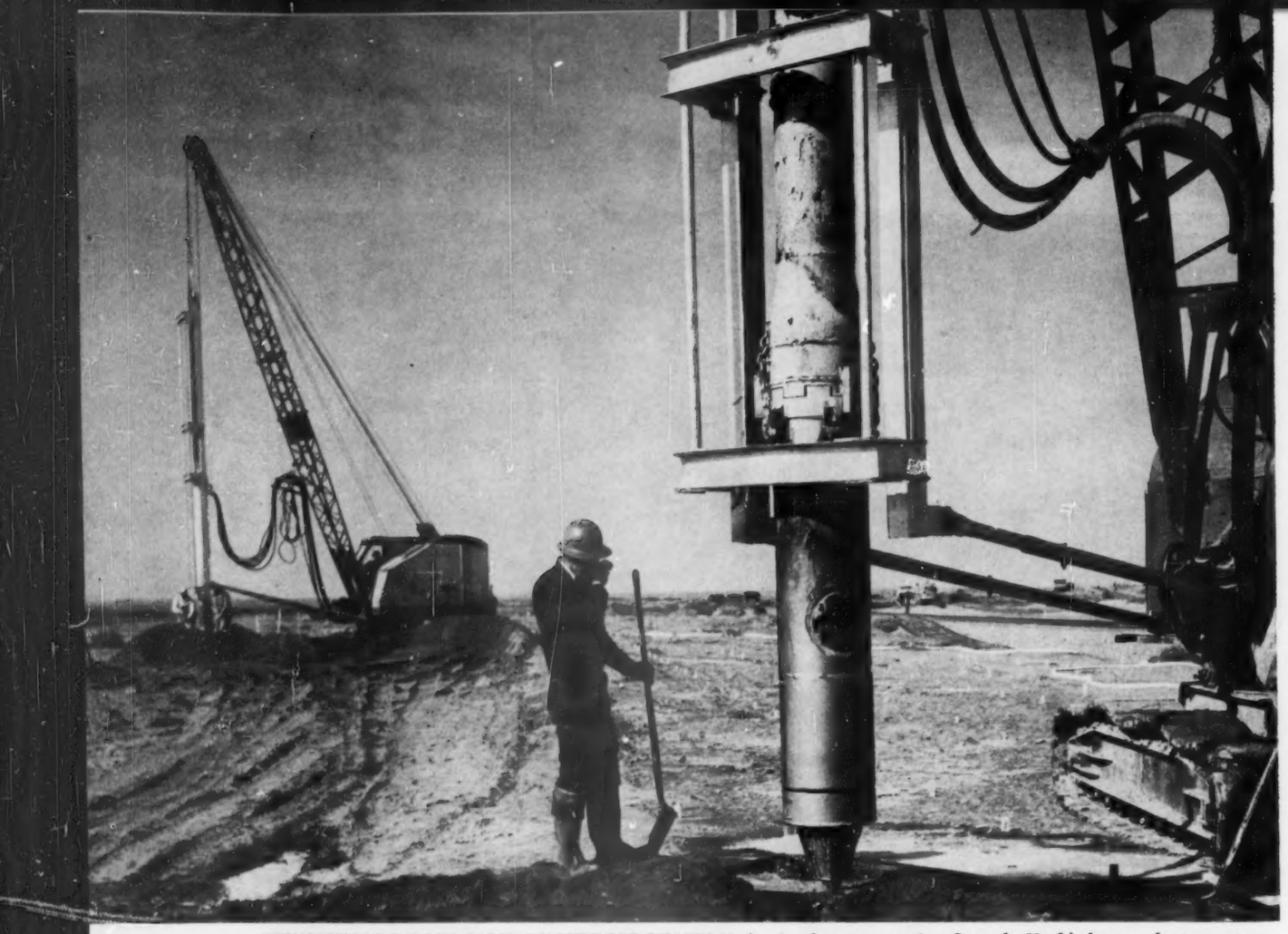
A Broadening Scope in the Northwest

Although the main predecessor companies from which Boise Cascade Corp. evolved were rather widely known as prime lumber producers, these firms also participated in allied fields. Since unifying the diversified parent firms and their affiliates under the single BC ownership about three years ago, the range of participation has been further broadened by acquisitions and mergers.

The activities are now so diverse that Boise Cascade, with affiliates, provides practically all services needed for building homes and other types of structures. With its recent entry into pulp-paper-packaging production, the firm further broadened its industrial base and marketing scope.

Now Rated One of Top 10

Boise Cascade Corp., is now rated as one of the nation's top 10 timber-producing firms. It entered pulp-paperboard-container production as result of plans laid in 1957. The organization's original entry into the paperboard products field followed completion of the first of two container plants in 1958. Operating as Cascade Container Corp., a BC subsidiary, one container plant is located adjacent to the new Cascade Kraft Corp. pulp-paperboard mill at Wallula, Wash., the other at Burley, Idaho. Each produces corrugated shipping containers, thus providing a stable outlet for a portion of the kraft paperboard manufactured by Cascade Kraft. Some of the latter plant's output is sold in the general kraft market.



DENSIFYING LOOSE SAND BY VIBROFLOTATION, firming base supporting Cascade Kraft's heavy plant structures. Otherwise piling or spread-footing construction would be required.

CASCADE KRAFT:

3. Mill Buildings on Vibrofloted Sand

The sandy formation that makes Ranney Method water collection system practical has disadvantages when it comes to erecting buildings for housing heavy processing machines. By conditioning the sandy soil to convert it from a naturally loose formation to a heavy, dense formation capable of supporting heavy structures without risk of settling, a major saving was realized. Without treatment of this sort, alternative construction techniques—such as driving piling throughout the area to firm up the building base or using spread-footing type building—would have been required.

Instead, Cascade Kraft became the first firm on the West Coast, and one of few in the entire country, to build a pulp-paper mill on sand compacted by Vibroflotation. The process, performed by Vibroflotation Foundation Co. (subsidiary of Rust Engineering Corp.), consists of eliminating the voids in the porous soil structure by rearranging the sand particles into a tight mass to a desired depth throughout the foundation area.

The process is carried out with a crane-mounted "Vibroflot", a 15-in. dia. unit 6 ft. long equipped with water jets and a vibrator powered by a self-contained 30-hp motor driving a 200-lb. eccentric at 1800 rpm. This vibrator, which provides the dynamic energy for compacting the loose sand, noticeably vibrates the ground throughout a radius of about 100 ft.

In lowering the Vibroflot into the soil, water is jetted from the bottom of this component. The water, introduced more rapidly than it drains away, creates a momentary "quick" action ahead of the penetrating mechanism. In conjunction with the vibration, this allows the gear to sink of its own weight to the desired depth. Upon reaching this level the water flow is shifted from the bottom to jets mounted at top of the cylinder. Pressure and volume are reduced so the jetted water carries sand to the bottom of the void.

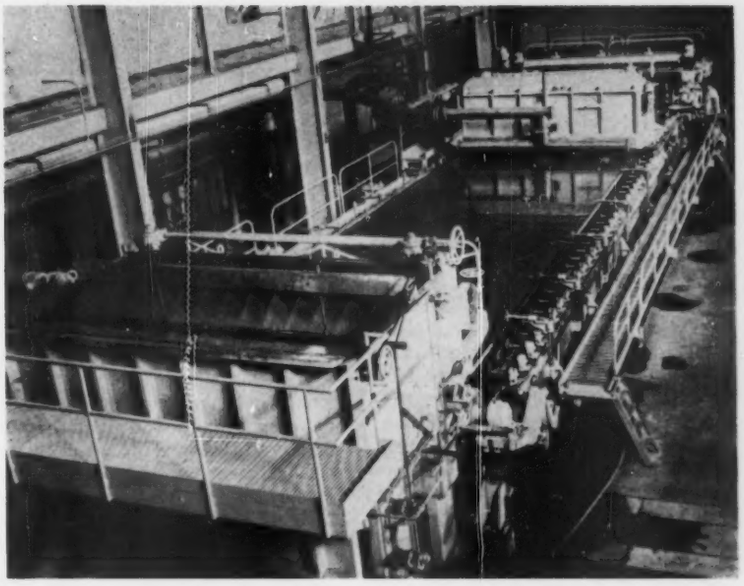
After operating at this lowest position until a desired density is obtained around the bottom of the processing unit, it is elevated in 1-ft. stages. The most effectual compaction takes place during the stationary intervals between lifts. As the loose sand "condenses" as result of the compaction, additional clean sand is added at the ground-surface level.

This processing results in a compacted column 8 to 10 ft. in dia. Spaced in overlapping patterns, these columns form a compacted subsoil of desired depth over the entire treated area. At Cascade Kraft, processing involved a triangular pattern of 6-ft. spacing, making a total of 1304 compactions ranging from 12 to 16 ft. in depth.

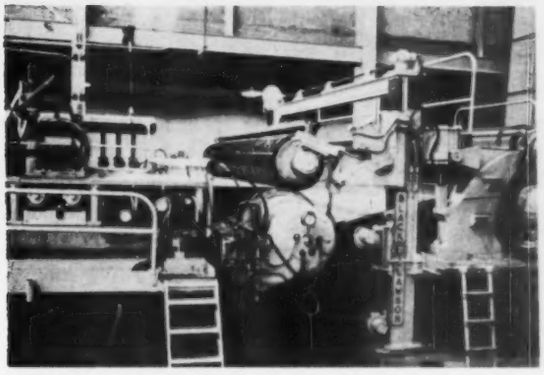
Another economic advantage resulting from the Vibroflotation method of increasing bearing capacity of soil stems from the fact that excavations made in the compacted sand do not slough off but, instead, maintain sharp vertical sidewalls.

CASCADE KRAFT

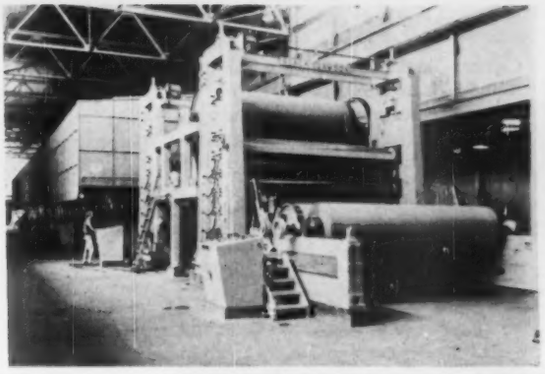
Picture Story of a Board Machine



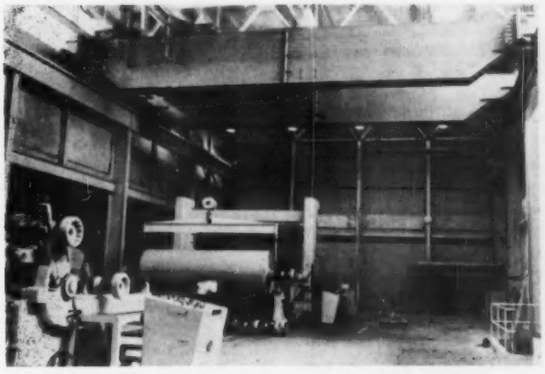
PRODUCING 150 TONS PER DAY of linerboard at Cascade Kraft single-machine mill, Black-Clawson Hydro-Flyte quick-change cantilever 250-1500 fpm Fourdrinier has 152-in. trim, 164-in. by 120-ft. wire, two Valley Iron inlets with airloading on secondary. It has 32 table rolls.



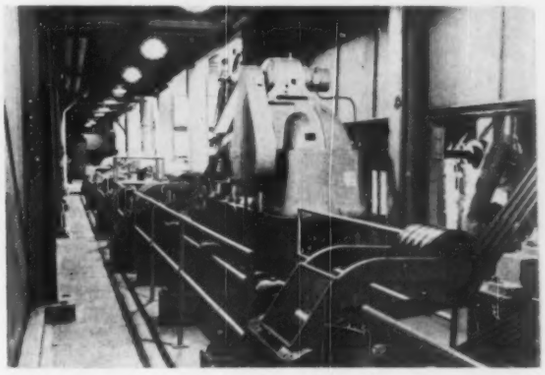
COUCH AREA PRECEDING dual-press section of B-C machine. Lumpbreaker roll neoprene (heat-resistant 225 P-J) covered by Griffith Rubber.



TWO 6-ROLL CALENDER STACKS separated by pair of dryers. Auto-Flyte reel has 83-in. dia. capacity. DECO transite hood houses dryer section.



PLACING REEL of 42-lb. linerboard in B-C winder (powered by Westinghouse dc drive) with 25-ton Whiting bridge crane serving entire machine room.



750-HP STEAM TURBINE (Westinghouse) powers B-C variable-speed line shaft driving machine through variable-pitch V-belt.

CASCADE KRAFT:

4. Cascade is Own General Contractor

Boise Cascade's Central Engineering division, organized two years ago to take care of all engineering phases involving expansion of the various divisions, was responsible for design and construction of the pulp-paper plant at Wallula as well as both of the container plants.

Concerning the Cascade Kraft plant, most functions normally performed by a consulting organization were handled by the CE Division. These included process design, plant layout, basic structural design, equipment specification and purchase, contract negotiation and field supervision of contracts. In effect, the CE Division acted as general contractor and correlated the work of contractors on the job.

According to W. O. Hisey, CE director, "Certain specialized and specified design work was subcontracted to outside offices, but this work was carried on under the supervision of Central Engineering and within the framework of our basic designs."

These subcontract design-work phases, and the participating firms, included the following: Structural steel for pulp and paper mill buildings—Tracey, Cook, Brunstrom & Dudley, Seattle; structural steel for recovery and boiler house—K. H. Siecke, Portland, Ore.; foundation and tilt-wall slab design—Tracey, Cook, Brunstrom & Dudley; chip handling structural design—Columbia Pacific Corp., Portland; electrical distribution—Frankfurther, Harstad & Associates, Seattle.

General construction of Cascade Kraft's pulp and paper mill was handled by Swinerton & Walberg Co., San Francisco, and its affiliated mechanical company, Engineers Limited Mechanical Construction Co. (Elmco). In addition to the general construction, these organizations handled the complete installation of all pulp and paper making machinery and equipment at the Cascade Kraft plant and the complete fabrication and installation of all process piping.

Electrical Construction Co., Portland, Ore., received the electrical installation contract. Local contractors were retained for grading, road building, rail sidings and other miscellaneous projects.

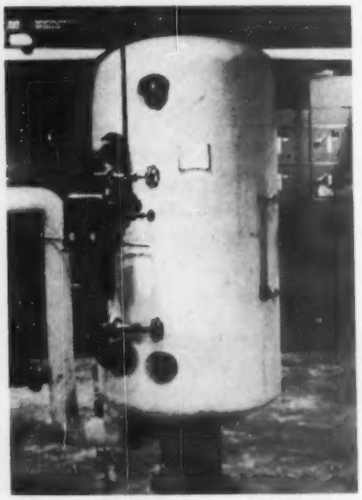
Provisions for Enlargement

By having incorporated unique design features into the plant structures, the buildings can be economically enlarged and still retain the functional advantages of obstacle-free interiors. Methods were adopted to achieve flexibility for future expansion, "to build a 'rubber' mill out of steel and concrete," says Mr. Hisey. All exterior walls (to 28-ft. height) are of concrete tilt slabs. These are attached to the steel frame by spot welding. Whole slabs can be readily cut loose at the welds and moved to other positions.

Provisions have been made for extending the mill building in length and width—endwise to allow for lengthening the present paper machine, in width for installing a complete pulp mill and another paper machine parallel to the present one.

The building's roof trusses were designed with view to eventual doubling the roof span, the machine room bridge crane designed to be lengthened to cover two machines. Columns and wall of the "expandable" side would, in such eventuality, be moved to a new location. Effecting these changes would convert the present single-machine building to a complete two-machine structure functionally free of interior obstructions.

The boiler plant structure was also designed to be readily expandable. The north walls can be removed for installing additional recovery units, southwalls for adding more power-boiler capacity.



UNIQUELY CONSTRUCTED FLASH TANKS, designed-furnished by James Brinkley Co., receive condensate from paper machine dryer sections. In place of supporting legs & braces, these set on 12-in. pipe functioning as low-velocity outlet to increase net positive suction head on pumps. Baffle in drop-leg deflects foreign solids past pump line to stand base for periodic elimination by blow-out through 2-in. drain valve.

PRINCIPAL SUPPLIERS

Fourdrinier Paper Machine (164-in. × 120-ft. wire, 46 dryers, breaker stack and size press, two calender stacks, reel, slitter-winder, sectional machine drive): Black-Clawson Co.

Primary and Secondary Headboxes: Valley Iron Works Co.

Super Joints and Automatic Land Compensators: Johnson Corp.

Motors, Switches and 4 Steam-Driven Turbines: Westinghouse Electric Corp.

Vacuum Pumps: Nash Engineering Co. (from James Brinkley Co.)

Roll Lowerator: Mathews Conveyor Co.

Roll Covering: Griffith Rubber Co.

Double-D Refiners, Jordan, Hi-Lo Pulper: E. D. Jones & Sons Co. (Beloit Iron Works)

Cowan Primary Screen: Appleton Machine Co.

Secondary Screen: Trimbey Machines Inc.

Preknotter, Twin Screw Chip Feeder: Improved Machinery Inc.

3,800-cu. ft. Digester (3): Chicago Bridge & Iron Co.

Hydraulic Blow Valves: Yarnall-Waring Co.

Steel Tanks: Hydraulic Supply Co.

Chest and Tank Agitators, Condensate Receivers, Foam Breakers, Knot Reject Dewatering Screen, High-Density Stock Conveyor: James Brinkley Co.

Pumps (stock, filtrate, liquor): Goulds Pumps Inc.

Water Stock Valves: Fabri-Valve Co. of America

Valves (Liquor, steam, stock, water): Jenkins Bros.

Mill Instrumentation: Taylor Instrument Cos.

Consistency Regulators: DeZurik Corp.

Automatic Resin Emulsifier: Hercules Powder Co.

Tile Work: Stebbins Engineering & Mfg. Co.

Nichols Vorject Cleaners, Blow Tank, High-Density Storage: A. H. Lundberg Inc.

Key Men at Boise Cascade

Hansberg ..... Hisey ..... Fery ..... Miller ..... Thompson ..... Randall

President R. V. HANSBERGER, who resigned as exec. vice pres. of Western Kraft Corp. to head this firm. . . . W. O. HISEY, director of Boise Cascade's Central Engineering div., was previously vice pres. of Western Kraft, at one time was pulp-paper professor at New York State College of Forestry, also was vice pres. and chief of foreign operations for Sandy Hill Iron & Brass Works. . . . JOHN B. FERY, gen. mgr. of the Paper div., was production mgr. for Western Kraft. . . . M. KEITH MILLER, chief engineer, was project engineer, Pulp div., Weyerhaeuser Timber Co., and plant engineer, Western Kraft. . . . FRED B. THOMPSON JR., gen. sales mgr., was district sales mgr. for Longview Fibre Co. . . . and GORDON RANDALL, gen. plant. mgr.

Production Men at Cascade Kraft

Trygg ..... Archer ..... Allen ..... Parkinson ..... Porter

Witters ..... Gransberry ..... Folkestad ..... Shellebarger ..... Hickey

Mill Mgr. HUGO TRYGG, formerly with Weyerhaeuser, IP, Longfibre, Western Kraft and other mills . . . G. C. ARCHER, pulp mill supt., formerly recovery foreman at Weyerhaeuser Springfield . . . R. P. ALLEN, promoted recently from tour foreman to paper mill superintendent . . . JOHN R. PARKINSON, technical supt., Institute of Paper Chemistry ph.d., and former project chemist for Weyerhaeuser Springfield . . . HARRY B. PORTER, maintenance supt., was engineer at CZ Port Townsend.

Master Mechanic G. A. WITTERS, previously maintenance foreman at CZ St. Helens . . . MAX L. GRANSBERRY, chief electrician . . . E. W. FOLKESTAD, mgr. for purchasing and traffic . . . R. M. SHELLEBARGER, office manager . . . R. J. HICKEY JR., tech. service and sales rep., previously plant supt. at Fibreboard Antioch.

Larrimore .. Willis .. Cavin .. Gates

PAPER MILL TOUR FOREMEN: OSCAR L. LARRIMORE previously with Whippany Paper Co. and Southern Paperboard Corp.; JAMES H. WILLS; J. E. CAVIN, from MacMillan & Bloedel Ltd., Port Alberni; H. P. GATES, formerly of R-W Paper Co., Longview.

Daily .. Nash .. Thompson .. Frodel

PULP MILL TOUR FOREMEN: JOHN M. DAILY, with Rayonier plants nearly 10 yrs.; JAMES H. NASH, was Bauer Bros. service engr. and asst. pulp mill supt. of Potlatch Forests Inc. prior to that; T. T. THOMPSON, formerly at Weyerhaeuser Springfield; W. A. FRODEL, previously at Weyerhaeuser Longview.

B&W Power, Recovery Furnaces; Cochrane Boiler-Water Conditioning and Blow-Off System: C. C. Moore & Co., Engineers.

Quadruple-Effect Evaporator, Decker, Brown Stock Washer: Swenson Evaporator div., Whiting Corp.

Boiler Instrumentation: Bailey Meter Co.

Causticizing System: Dorr-Oliver Inc.

Lime Kiln (8 × 150 ft.): Vulcan Mfg. Co.

Airveyor System (dry chemicals): Fuller Co.

Vapor Absorption System, Machine and Washer Hood, Lab-Type Chip Oven: Drew Engineering Co.

Chip Unloader: Air-O-Flex Equipment Co. (Larson & Baardson, Portland)

Prime Chip Transport Systems: Rader Pneumatics Inc.

Chip Weightometer: Merrick Scale Mfg. Co.

Trackmobile: Whiting Corp.

Pumps (water supply): Fairbanks, Morse & Co.

GENERAL CONSTRUCTION AND MECHANICAL CONTRACTOR: Swinerton & Walberg Co. (with affiliate Engineers Limited Mechanical Co.)

ELECTRICAL INSTALLATION CONTRACTOR: Electrical Construction Co.

STRUCTURAL ENGINEERS FOR PULP-PAPER MILL DESIGN, INCLUDING FOUNDATION PREPARATION: Tracey, Cook, Brunstrom & Dudley.

STRUCTURAL STEEL FOR RECOVERY AND POWER BOILER HOUSE: K. H. Siecke.

CHIP HANDLING STRUCTURAL DESIGN: Columbia Pacific Corp.

ELECTRICAL DISTRIBUTION: Frankfurter, Harstad & Associates.

BUILDING SITE VIBROFLOTATION: Rust Engineering Co.

SOIL MECHANICS CONSULTANT: Dames & Moore Co.

WATER SYSTEM: Ranney Method Water Supplies Inc.

NATIONAL SAFETY CONFERENCE–PULP & PAPER

Noise Hazard In Spotlight . . . Mills Warned of Safety Laws

● Safety through legislation stands as a threat to all industry. This further step in government control can be avoided only by concerted effort on the part of manufacturers who will take a deeper interest in accident prevention.

On such a warning the Pulp & Paper Section of the National Safety Council met during the recent 47th annual Congress in Chicago.

"The pulp and paper industry takes a very active interest in all legislative matters," Harry H. Saunders declared as the session's keynote speaker. Mr. Saunders is vice pres. of St. Joe Paper Co., St. Joe, Fla.

> **"But, I do want to sound a word of warning: Let's not wake up some day and find ourselves in the position where we will have to say to an employe, 'Now please don't get hurt; but, if you do get hurt, look what you get,' " Mr. Saunders said.**

Assuming leadership of the section as chairman for 1959-60 was George R. Merriman, So. Kraft Div., International Paper Co., Mobile, Ala. New vice chairman is D. V. Hill, Mead Corp., Kingsport, Tenn.

Noise and Efficiency

Noise as a health problem–especially in pulp and paper manufacture–is assuming increasing importance. Legislation for evaluation of hearing disability is necessary, R. L. Young assured the Pulp Manufacturing Session, but it is not the whole answer. "The solution of industrial noise problems must originate with industry," he said. Mr. Young is on the staff of the Industrial Hygiene div., Employers Mutuals of Wausau (Wis.).

"It is felt that hearing measurements will become a routine part of pre-employment physicals for nearly all industry in the not-too-distant future," Mr. Young declared. Warning that exposure to excess noise over an extended period can and does cause permanent damage to hearing, the speaker cautioned that pulp and paper is–although innocently–a prime offender.

"While there has been much discussion of the principles and techniques of noise control," he said, "progress has been rather slow." Perhaps industry has not recognized the seriousness of the problem due to the lack of basic information, Mr. Young continued, "or perhaps there are no environmental controls for some noisy operations."

Slasher Saws to Stock Pumps

Measurements taken by Employers Mutuals during the past six years have shown noise levels decrease in intensity in the following departments–in this order: (1) Slasher saws; (2) barking drums; (3) deknotter and chipper waste discharge; (4) wood chipper; (5) water grinders, electric grinders; (6) flat screens, knotter screens and discharge end of chip screens; (7) digester cook floor area, and (8) stock pumps and wet lap machines.

"Generally speaking," Mr. Young explained, "a noise problem should not be considered solved until the necessary reduction has been achieved by engineering control." Basic methods of engineering control are: (1) Reducing the amount of noise at its source; (2) reducing noise transmitted through the air by means of acoustical enclosures or barriers; (3) reducing noise through application of sound-absorptive materials, etc., and (4) reducing noise by revision of operational procedure.

Suppliers' Responsibility

Most effective control is to reduce noise at its source through built-in design. It is in this phase of the problem that machinery and equipment manufacturers share responsibility with the industry, "and it is hoped that they will accept this challenge." Nevertheless, the speaker said, for some time to come control will involve modification of existing equipment rather than purchase of new.

Unfortunately, it is seldom that acoustical requirements can be dominant over production requirements. "These production requirements make it difficult to tailor a solution to a specific problem–so that industrial noise control frequently takes the form of trial and error and results in a compromise between acoustical and production goals."

DR. R. W. KASCHUB, medical director, Brown Co., spoke to the Paper Manufacturing group on "Employe Placement" and to the Pulpwood Logging group on "Practical First Aid in the Woods."

ARTHUR HOYT SCOTT AWARD is received by Karl Bendetsen (right), vice president, Champion Paper and Fibre, from Claire Lyon, corporate employe relations manager, Scott Paper Co. This award signifies the best corporation-wide safety achievement in 1958 in the pulp and paper industry.

Random Thoughts on Safety

Safety experts addressed the section's sessions:

Forrest E. Kimmell, safety and medical director, Sutherland Paper Co., Kalamazoo, Mich.: "A disabled person will not be a safety hazard if he is placed in the job suitable for his particular ability."

A. B. Barnes, safety and fire prevention engineer, Fibreboard Paper Products Corp., Oakland, Cal.: "Our major problem still will be to guard people from themselves."

William H. Stubbs, training director, American Box Board Co., Grand Rapids, Mich.: "It's up to the salesman—the safety engineer—to find the basic drive that will motivate each of us."

John W. Shank Jr., international representative, International Brotherhood of Pulp, Sulphite & Paper Mill Workers, Sartell, Minn.: "Enlightened management has many of the same interests in safety programs as has labor."

Robert D. Gidel, Safety Standards & Services, Bureau of Labor Statistics, Washington, D. C.: "Many safety programs hold no resemblance to the people they deal with."

Champion Paper & Fibre Co. was winner of the annual Arthur Hoyt Scott Award for 1958. The trophy, donated by Scott Paper Co., is for an over-all company operation (not including subsidiaries with separate safety organizations) with the best safety record on the basic of Council records.

For the second consecutive year, Falls Paper & Power Co. (Scott subsidiary) was declared the winner of the Edward Benton Fritz Memorial Trophy for the pulp and/or paper mill with the best record in Division I of the annual competition.

NPTA Speaker Warns Mills To Improve Merchant Relations

Merchant-mill relations will have to be improved if the paper industry is to increase distribution and at the same time increase profits both to the manufacturer and distributor.

Addressing the 1959 semi-annual convention of the National Paper Trade Assn., J. Lloyd O'Connell declared, "Certainly, today we are going through a phase of the paper industry in which the merchant and the mill will have to be closer together than ever before." Mr. O'Connell, gen. sales mgr. for printing papers, Blake, Moffit & Towne, gave reason for better relations:

"The merchant is the best customer of the paper mill. He distributes approximately two-thirds of all tonnage manufactured in grades that are open for merchants to sell. Paper sold to the merchants returns to the mill the greatest profit per ton. Merchants are the most loyal of mill customers, and consequently the mill enjoys greater security on merchant tonnage."

Blackman New President

Elected president of NPTA at the Chicago meeting was Floyd H. Blackman, vice pres., Stone & Forsyth Co., Cambridge, Mass. He succeeds King Wilkin of Crown Zellerbach Corp., who was forced to resign in July for business reasons.

Of the four basic methods of selling paper—(1) direct, (2) through mill-owned merchants and converts, (3) in a complete package deal and (4) through independent franchised merchants, Mr. O'Connell called the latter "the ideal mill-merchant relation method of distribution." Improving that relationship can be accomplished he said, by:

(1) Mill advertising that features distributors. (2) Mill support of merchant sales forces. (3) Mill-sponsored merchant advisory councils, marketing and grading committees. (4) Active selling on the part of the merchandiser. (5) More specialization on the part of the distributor. (6) Less merchant reliance on the mill representative.

"Let our mills manufacture paper and advertise it", Mr. O'Connell concluded, "but we as merchants will do the selling. And I mean really do the selling."

Regained Leadership

"The only requirements of management to attain influence and status in the field of labor relations today is to either keep or regain the leadership with which it is naturally endowed." This was the view expressed during the NPTA meeting by John H. Doesburg Jr., attorney and labor consultant for the Master Printers Section, Printing Industry of America.

Unions, he said, have satisfied the wants of the worker. Management should go one step beyond. The speaker listed the wants of the laboring man as: security; recognition (business has overlooked it, he said); good communications; mutual understanding (freedom from fear), and opportunity.

Need for Price List

A printed price list from which no deviation is allowed is a basic need of paper merchants, according to Max Clampitt, president of Clampitt Paper Co. "Once you have established a sound basis for merchandising," he warned, "you will end up with more volume, more business, more respect and a better relationship that will be stronger as the years go by."

NPTA OFFICERS DISCUSS PROBLEMS at national meeting in Chicago: (from left) President Floyd H. Blackman, Stone & Forsyth Co.; Treas. Charles E. Canfield, Canfield Paper Co.; Vice Pres. (wrapping papers) Gardiner Young, Bancroft Paper Co., and Vice Pres. (fine papers), W. F. Obear, Tobey Fine Papers Inc.

How Riegel Coats Board

Coating makeup is described, too. Dr. Zobel discloses new facts on wood yield. Buckeye's winning safety program.

By WILLIAM F. DIEHL JR.
Southern Editor, PULP & PAPER

Gulfport, Miss.

● From a standpoint of timeliness this year's Southern and Southeastern Superintendents joint fall meeting was perhaps the most exciting in years. There was surprising continuity in its presentations, most of them focusing on quality and up-grading products.

The meeting attracted several hundred to the Edgewater Gulf Hotel, where Continental Can Co.'s Nelson Michaud and Champion's Joe King were joint chiefs of staff.

Air Knife Coating at Riegel

Noel Phillips of Riegel Carolina described the Acme, N.C., mill's use of air knife coating, which this year put the former pulp mill into the race to produce more and better coated board.

Riegel, he said, coats the felt side of the board. A 226 in. Waldron Microjet Uniflow coater with lip clearance ranging from .00 to .050 in. is used, equipped with stainless steel color and catch pans. The lead-in roll, applicator roll and back up roll are all 13.75 in. dia. and are chrome plated steel. A Ross-Midland air drying system with straight exhaust fan of 30,000 cfm and two 50,000 cfm recirculation fans provides drying capacity.

The system is designed to operate at a maximum temperature of 300° F. with air velocities of 8,000 to 10,000 fpm. The coating run following the coater is about 100 linear feet. When operating the coater a Sheehan rope carrying system on the front of the machine is used; the rope carrying system is on the back side when machine is not coating.

Typical coating color for the air knife coating of board consists of 100 parts of clay, dry basis; 18 to 25 parts of adhesive, dry; water to proper solids content and defoamers, tinting dyes and pigments as needed. Stainless steel tanks, piping, control valves and pumps are 316 stainless throughout the color system. The coating is pumped by Moyno positive displacement pumps into the coating applicator tank through five nozzles in the bottom of the pan. The excess coating that is removed from the board by the air knife goes to a stainless steel catch pan.

Mr. Phillips noted that "lip coating for good coating runs between .028 in. and .030 in., using 2.5 to 3.0 psi air pressure on the knife. Air dryer temperature for this operation runs 275 to 300 deg.

According to Mr. Phillips, the air knife coater has proved: Easy to operate; able to apply a uniform, continuous coating to the surface of the board; apply a wide range of coat weights and able to operate over a wide solids range. The board has printed well by offset, letterpress and rotogravure.

Based on experience, Mr. Phillips predicts developments in the field of air dryers where velocities of 14 to 16,000 fpm will be common and will permit coating stations ahead of the first calender stack. "It isn't hard to visualize," he concluded, "a Fourdrinier board machine equipped with four coating units, two for each side of the sheet, and with four different types of coaters on the same machine."

Laying Down the Law about Wood

Dr. Bruce J. Zobel, assoc. prof. of forest genetics at North Carolina State's school of forestry, pulled no punches in his discussion of wood properties:

"I don't know of any group who knows less about its raw materials than papermakers," he stated. "I've had conferences with people in paper mills and they have no idea what wood properties mean to paper quality.

"The quality of paper is quite dependent upon the wood you start with."

He then knocked some accepted theories into a cocked hat. Point One: You can't expect good yield from trees when the bottoms are cut and sold for lumber and the tops are used for pulp. Reason: Fiber length is shorter, specific gravity is lower, cellulose yield therefore is less. By means of slides he showed how the young center wood gradually becomes the entire yield of the tree as it grows taller and taller. Result, he pointed out, is that tops from thinnings and lumbering have the same properties as core wood, which has fibers four or five times shorter than outside wood. Tearing strength is considerably less in the center, he added.

Specific gravity of wood varies from one Southern region to the next, he said. Also such things as crooked trees can create compression wood which has shorter fibers, is lower in yield.

One of Dr. Zobel's conclusions: Since older trees yield less low yield center wood, yield therefore is higher from one 30 year rotation site than from two 15 year rotations on the same site.

Lime Reburning Experience

During startup of its lime reburner in the latter part of 1952, said O. A. Marrow, Riegel, Carolina had trouble with rings and a certain amount of poor operation due to cold or overburned lime. Part was due to irregular operation in the causticizing plant. During such periods it was necessary to add water after the Bird centrifuge with the mud going into the kiln. This prevented mud and soda rings. When trouble continued the following operational changes corrected it:

1. Water into centrifuge was discontinued.
2. Percent solids of lime mud going to centrifuge was raised to 45 to 50%.
3. A standard for soda content in lime mud from mud washers was established at .3 to .5 cft.
4. Wash water temperature was maintained at 160° F. in mud washer.

Lime recovery success, said Mr. Marrow, is attributed at Riegel to adequate mud washing equipment, controlled moisture and soda content to lime kiln and heavy mud solids to the Bird centrifuge and kiln.

Age of Quality

Consistent uniform quality builds customer confidence and loyalty, reminded Burton C. Berg, vice pres. of

CHIEFS OF STAFF at joint Southern and Southeastern meeting, JOE KING, left, of Champion, and Continental Can's NELSON MICHAUD, right, greet PIMA president A. C. McCORRY, of St. Regis' Tacoma mill.

GENE WARD

DR. BRUCE ZOBEL

NOEL PHILLIPS

O. A. MARROW

A. F. KENNEDY

D. W. RANDOLPH

BURTON C. BERG

Mead Papers, Inc., Dayton, O. Too frequent off-quality periods establishes a sales handicap. Quality, he said, sells. Then he pointed to various national advertising slogans stressing quality.

Then Mr. Berg sounded an alarm: "Eleven billion dollars or so will be invested in advertising and promotion in 1959. Fewer of these dollars than ever before are being spent on paper. Television has steadily taken a larger share. If we can make Coca Cola or the red tomato or a tube of toothpaste or a new car look better and more appealing on paper we can expect to capture more advertising dollars."

The safety program which has racked up the world's safety record for Buckeye Cellulose Corp. was described by one of its proud inceptors, A. F. Kennedy, general prod. mgr. at Memphis, Tenn. On five occasions one million man-hours or more has been reached and Buckeye is now shooting for the five million mark.

Step 1: Everyone participates in some kind of safety work, as individuals and as groups.

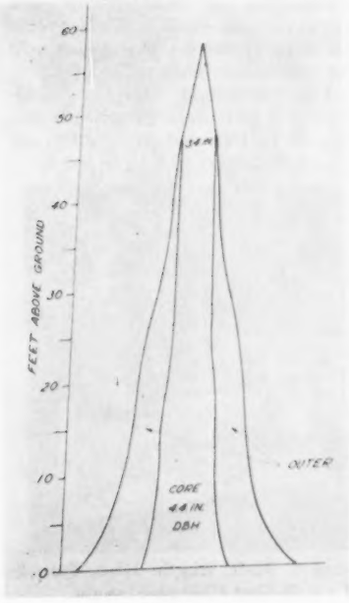
Step 2: Everyone from top management down was included.

Step 3: The safety engineer interviews prospective employes, goes over past safety records, and safety phases of the employe manual. A new worker is instructed on safety practices at least 15 minutes a week for his first three weeks.

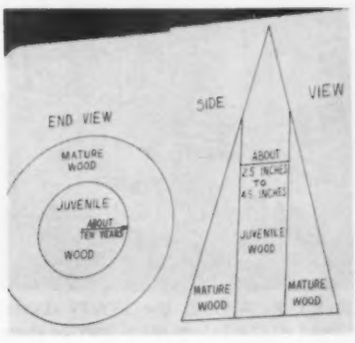
Step 4. Every employe—manager down—is required to attend at least one safety meeting a month.

Step 5: A continuous visual program is carried out—color coding of lines, safety displays, color slides and movies of unsafe acts and conditions.

Step 6: Personal participation is stressed. A committee of four people conducts the monthly meeting with the safety engineer. Each member serves four months. A new member each month is a supervisor who has had a minor injury under his supervision.



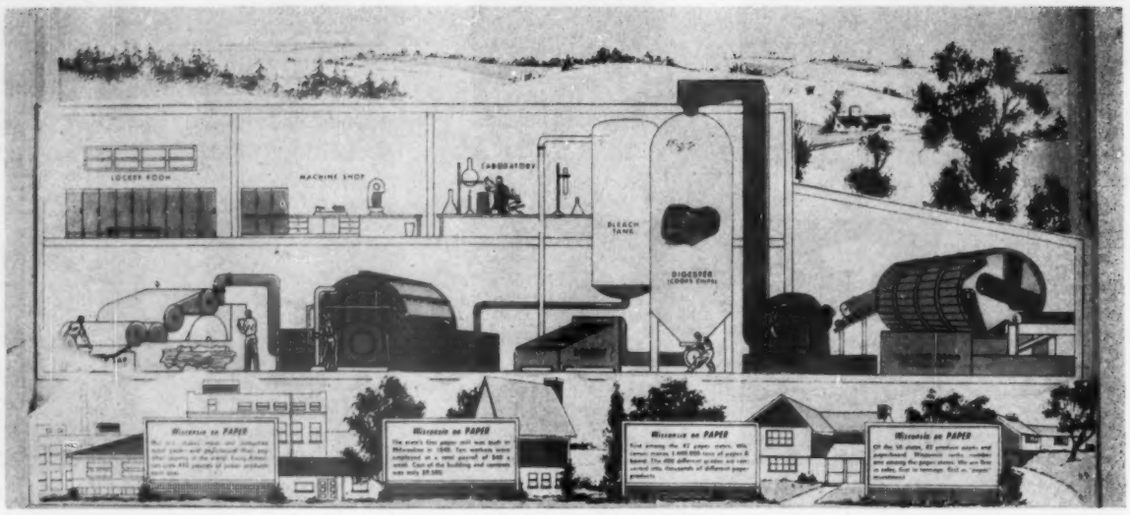
DANGER of using thinnings and tops is illustrated in drawings shown by North Carolina State's Dr. Bruce Zobel. At left, how core wood becomes entire makeup of tree toward top. Below, outer wood, with high specific gravity, longer fibers, higher yield, is prevalent near ground. Core wood has lower tensile strength, yield.



Education in Winders

Rewinding and slitting procedures were designed by Eugene J. Ward, vice president-sales of Cameron Machine Co. Highlighted by descriptive slides, the talk described various methods for performing each operation. An illustrated booklet containing complete information is available by writing Cameron, Mr. Ward said.

D. W. Randolph, asst. mgr. of Champion Paper & Fibre's personnel administration dept. in Canton, N.C., described how Champion trained its men to take over operation of its new No. 20 machine (See "Plenty From Twenty," PULP & PAPER, July 1959, page 62) and John Moore, asst. paper mill supt. at Union Bag-Camp in Savannah, Ga., moderated a panel on wet strength broke pulping which included Jack Noble, asst. paper supt. at West Virginia Pulp and Paper's Charleston mill, Al Putnam, tech. asst. to the paper mill supt. at Charleston, and Gordon Trainham, supt. Brown's Island mill, Albemarle Paper Mfg. Co., Richmond, Va.



IMPORTANT FIRST STEP IN PAPERMAKING is explained to school child and adult alike in a new animated display developed by the Wisconsin Paper Industry's Information Service—its latest contribution to public relations. Four panels show the pulp making process (above), refining techniques, how paper is formed on the Fourdrinier and the raw materials.

The Industry's Newest Salesmen

Wisconsin's public relations-minded mills make another contribution to the Story of Paper and its Community.

● A "nutshell description of the papermaking process" has gone over big in Wisconsin. Badger State pulp and paper mills—pioneers in the industry's public relations efforts—have established another "first."

A lightweight animated display takes the viewer step-by-step through the tree-to-finished-product romance of the paper mill. Available for schools, museums, open house plant tours, sales meetings, etc., the exhibit has been produced by the Information Service, Wisconsin Paper Industry, Neenah. It may be obtained at a cost of $300 plus freight. (ISWPI is sponsored by 21 member mills.)

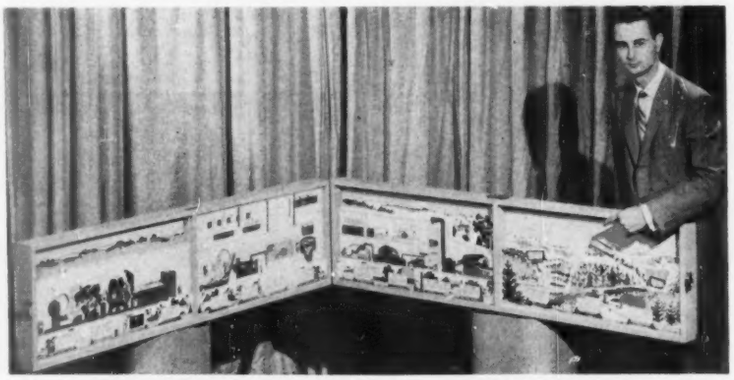
This story of paper—told in four colored panels with small animated machines—is a direct outgrowth of the popularity of "Paper City, Wisconsin, U. S. A.," the 35-ft. mobile trailer that has been appearing throughout the state for several years (see PULP & PAPER, February 1959, page 59).

Also developed by the Wisconsin Information Service, the $20,000 Papermobile is presently booked months in advance. It was to alleviate this demand that the new low-cost displays were developed. A number of paper companies are donating them to schools in their communities, and one has been given to the huge Milwaukee Public Museum.

But, it is to the plants themselves, says the Information Service, that the animated displays appeal most. Firms procuring them have found they are invaluable for conventions, sales aids.

The 45-lb. one-man display is powered by the normal 110-volt circuit. A small motor controls the movement of all the incorporated animated machines; barking drum, chipper, digester, pulp lap machine, jordan, rotary screen, Fourdrinier, calender stack, etc. A record that can be played on any 33⅓-rpm phonograph is a vital part of the exhibit (if users prefer, an oral presentation can be made). In some cases, such as window displays, simple signs explaining the workings of the various machines suffice.

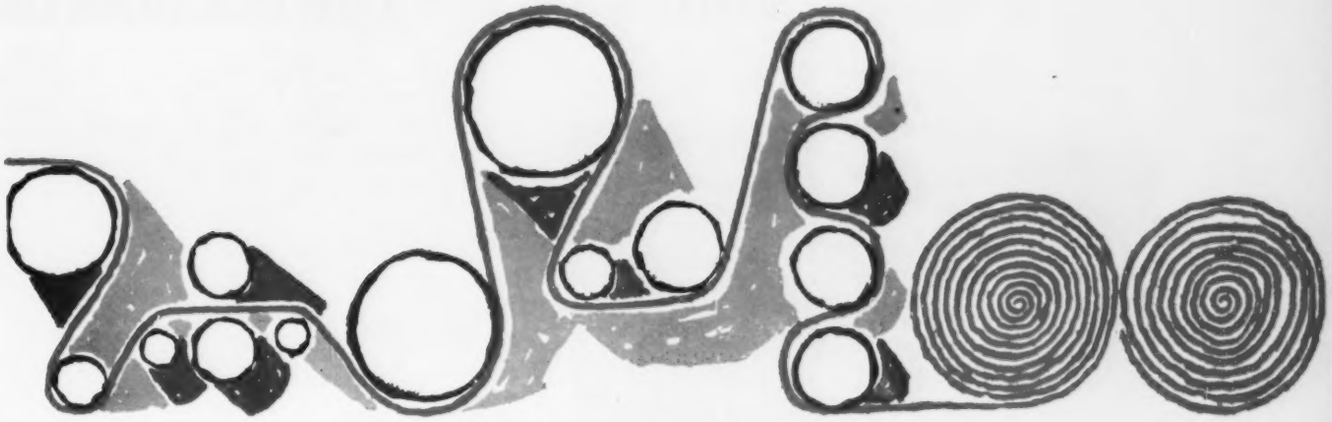
The two-section, four-panel fold-out unit is 12 ft. in length when in use. It is 15 in. high and 3¼ in. deep and folds for carrying to 6 ft. in length.



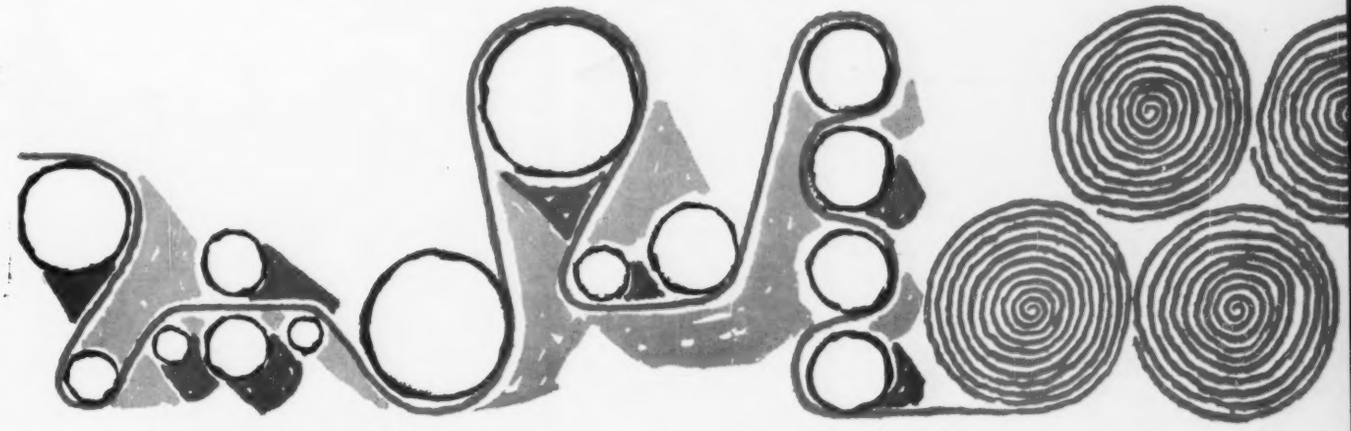
READY FOR USE, the ISWPI display opens to 12-ft. length. Here, Patrick Murphy of the Information Service shows off a unit. Cost $300 plus freight.

plan now to

POWER-UP FOR PROFIT ELECTRICALLY



Crown-Zellerbach did at Port Townsend, Washington



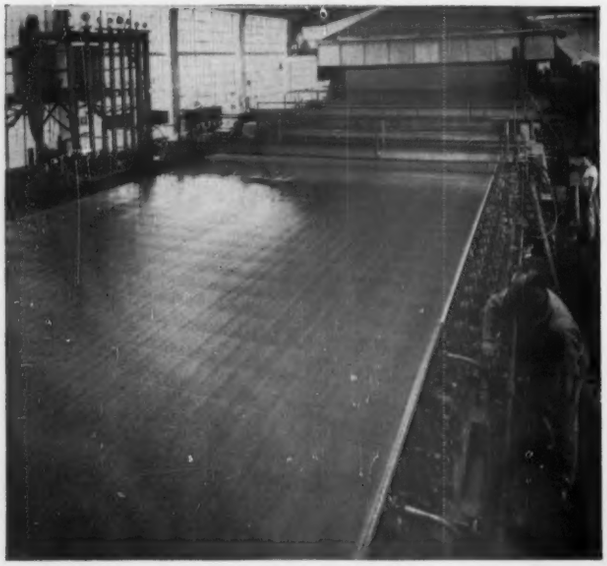
increased capacity . . . reduced unit costs

When Crown-Zellerbach Powered-Up the Number 2 paper machine at its Port Townsend plant, a modernized electric sectional drive helped increase operating speed, widen the speed range and provide greater availability. Results . . . increased capacity, reduced unit costs.

You will need more capacity to meet the 40% increase in demand for your products by 1965. Be sure that your electrical equipment will produce profits as well as output. See how Westinghouse helped Crown-Zellerbach to Power-Up the Number 2 paper machine at its Port Townsend plant. J96136-1

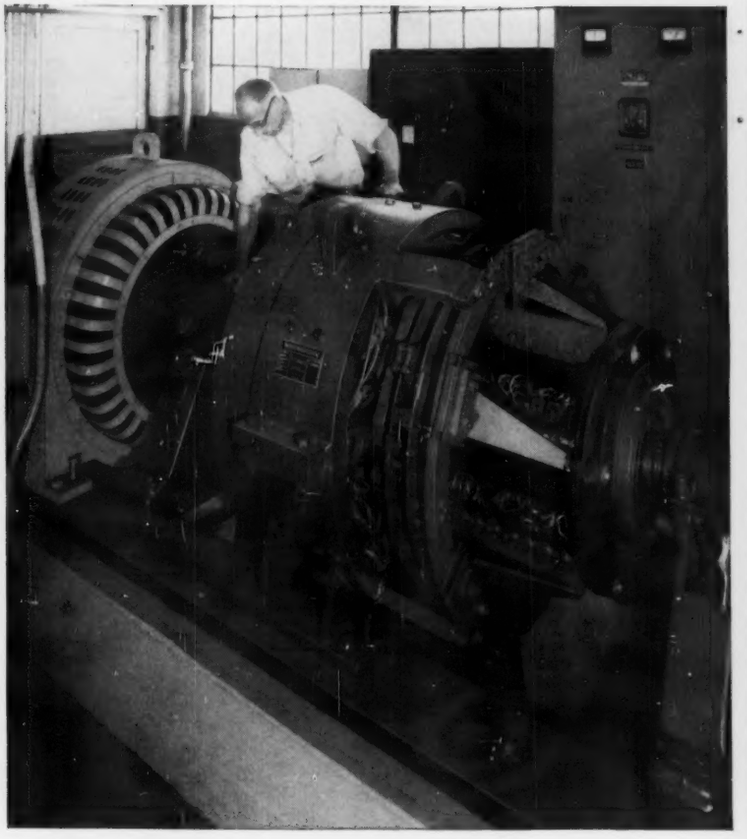
YOU CAN BE SURE...IF IT'S **Westinghouse**

here's how Crown-Zellerbach



Wet end view of modernized Number 2 paper machine in Crown-Zellerbach plant, Port Townsend, Washington.

J-96136-2



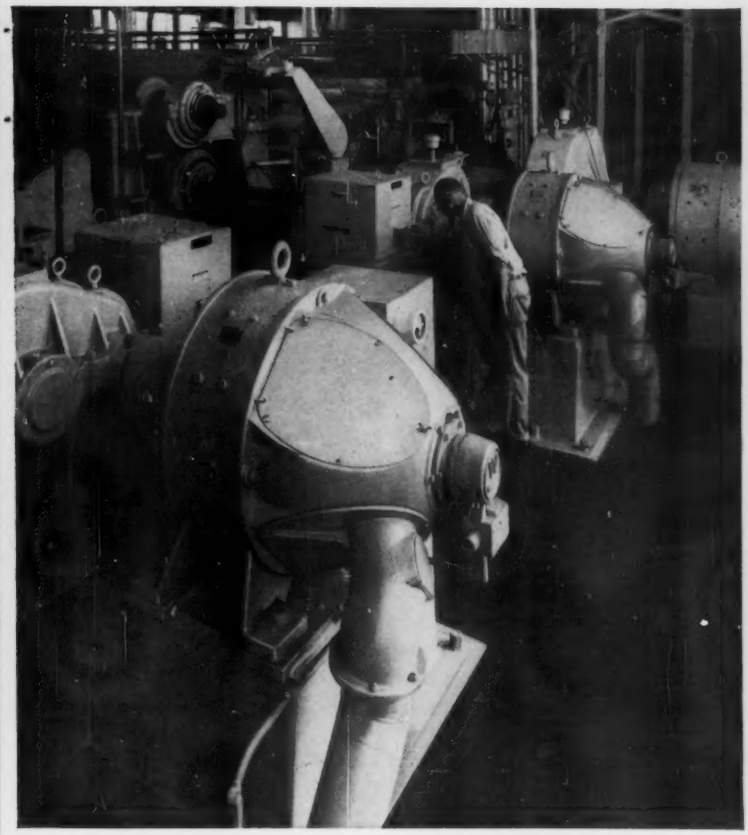
This 3000-amp, 75-volt booster generator was added to increase operating voltage and thus permit higher speeds. SLIPSYN® high-voltage synchronous motor control starter for the driving motor is shown in background.

POWERED-UP at Port Townsend

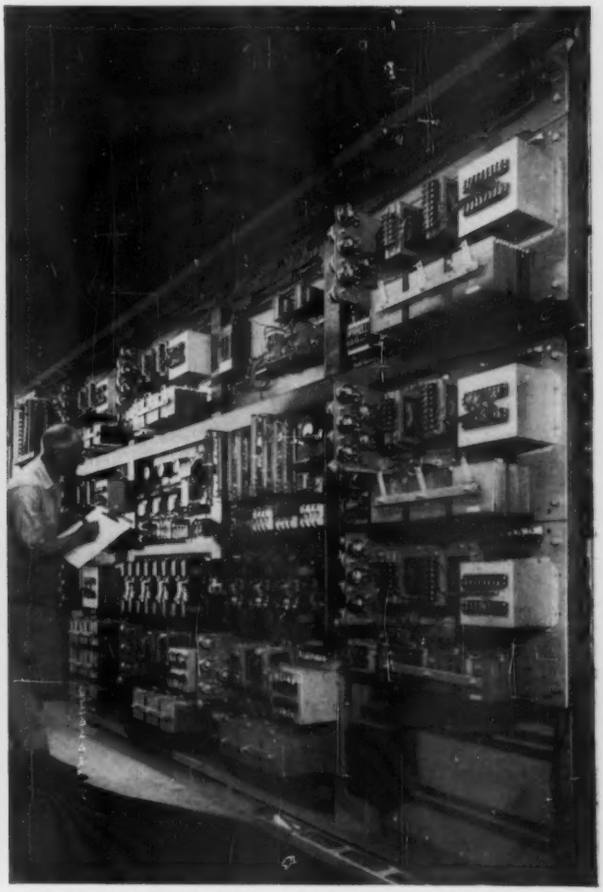
Modernization of the Number 2 paper machine at Crown-Zellerbach's Port Townsend, Washington, plant increased rated top speed from 1050 ft/min to 1750 ft/min. Also, the speed range was widened from 300-1050 ft/min to 480-1750 ft/min. The increased operating speed and range flexibility, plus the greater availability provided by static Magamp control, all contributed to a reduced cost per ton. All this was accomplished at minimum cost by building around the existing magnetic control.

J-96136-3

YOU CAN BE SURE...IF IT'S **Westinghouse**



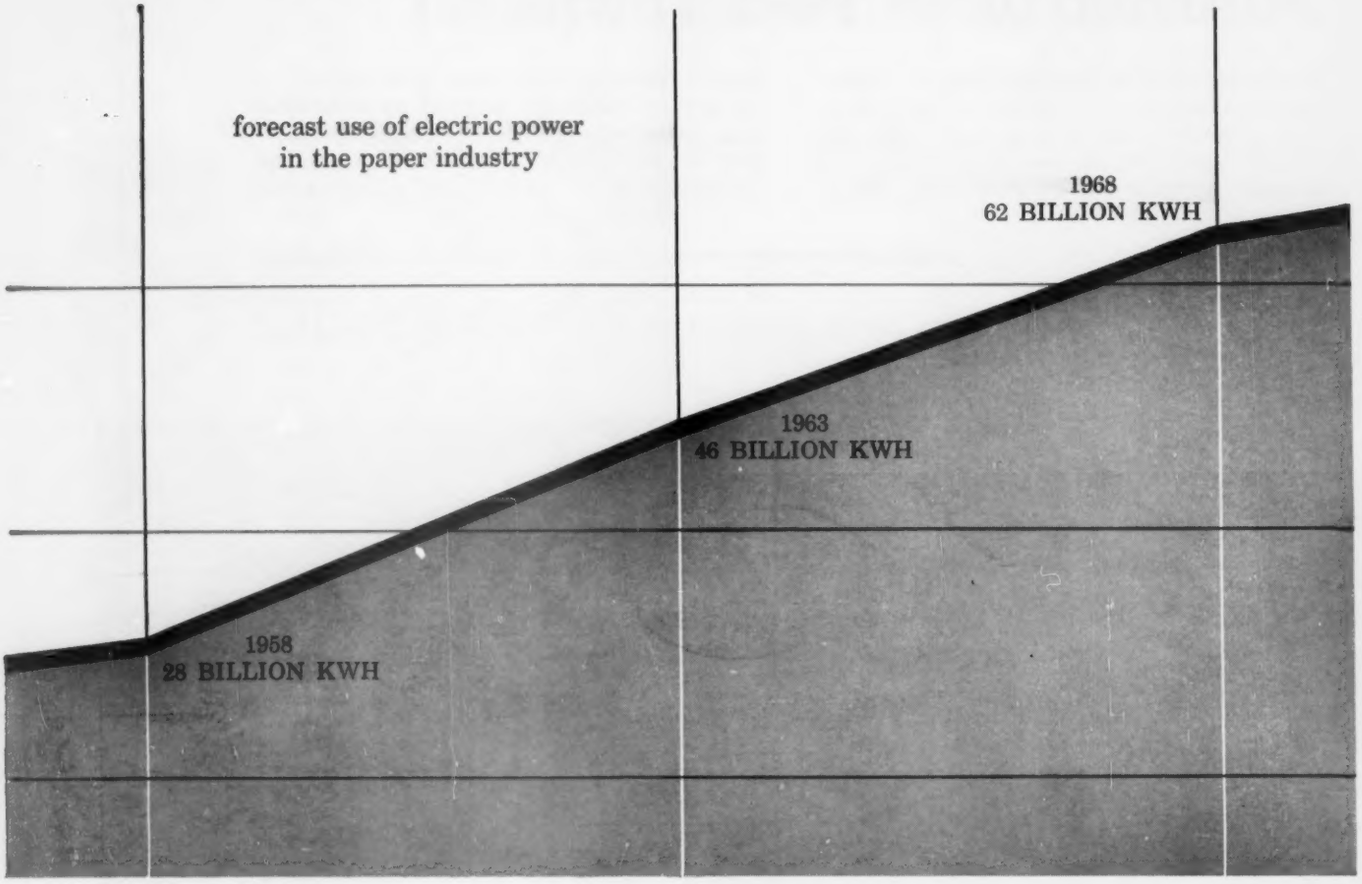
These 100- and 125-hp press motors are integrally mounted with the Westinghouse reducers to conserve space and permit accessibility. These unitized sections were installed to meet the increased power requirements. Drive units on the press section and couch motor are shown in the background.



Lead electrician checks Magamp, a static control-type regulator. The use of static components in this control system results in infinite life and minimum maintenance. Greater machine availability and increased production are assured. Magamp panels were installed in the existing magnetic control board.

here's why you should plan now to

POWER-UP FOR PROFIT ELECTRICALLY



To stay competitive, you will be investing in a tremendous increase in electrically powered processing machinery. Be sure it is engineered to produce profits.

Power-Up is a Westinghouse program to help you increase profits through greater productivity. In your plant it may be higher capacity machinery or an engineered control system to provide more uniform production. Whatever the need, maximum use of low-cost kilowatthours can help you earn satisfactory profits.

You will need more capacity to meet the 40% increase in demand for your products by 1965. Be sure—like Crown-Zellerbach—that your electrical equipment is engineered to produce profits as well as output. Call your Westinghouse representative or your utility power sales engineer. They can tell you the electrical steps you can take now to start a Power-Up program in your plant. J-96136-4

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Whatever your plant or process, Bristol engineers —as at Wood Conversion—are always ready to work with your engineers in setting up a new instrumentation system or in modernizing and improving your existing system.

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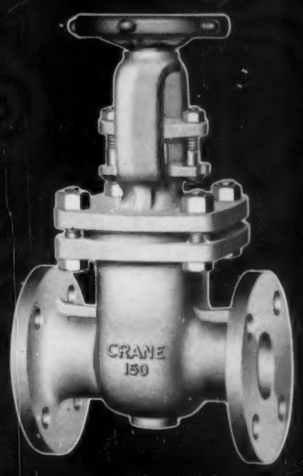
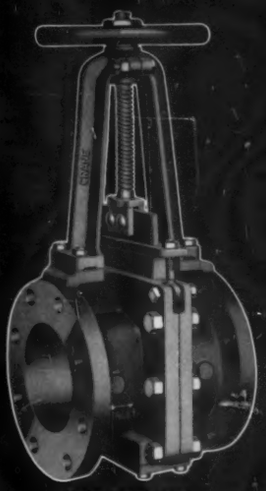
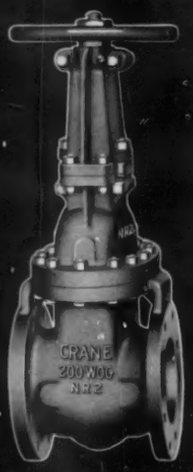


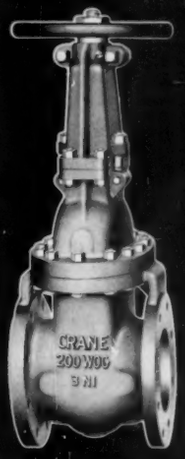
Stainless Steel Valves



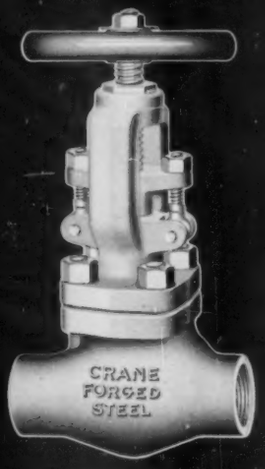
Pulp Stock Valves



Ni-Resist Iron Valves



3% Nickel Alloy Iron Valves



Chlorine Valves

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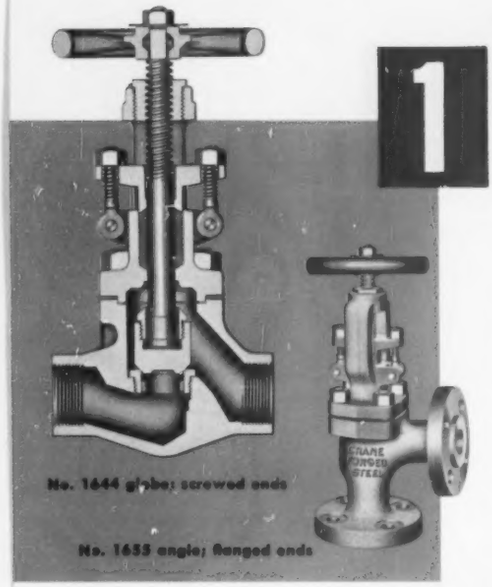
5 VALVES

that are cutting operating costs for pulp and paper mills

CRANE®

CRANE MAINTENANCE-SAVERS



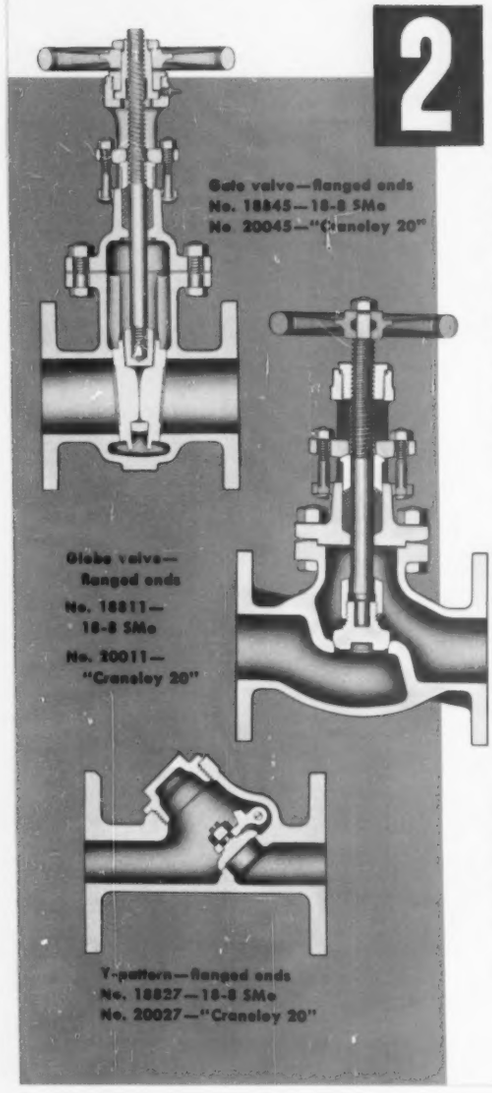
1 CHLORINE VALVES—Strong Steel —in globe and angle patterns

Choose these valves for all water-free chlorine gas or liquid services up to 300 F. They're ideal for chlorinating lines in bleaching and processing, and in treating water and wastes. There's extra strength where needed in the steel body and integral bonnet and yoke construction. And now, Crane supplies the flanged globe pattern in sizes up to 6 in.

CRANE QUALITY FEATURES

- Husky Monel stem—permits high seating force without deflection. Outside threads unaffected by line fluids.
- Teflon packing in extra-deep stuffing box . . . swinging gland eyebolts for easy servicing.
- Monel gasketed male-female bonnet joint with heavy bolting. Leak-proof and blowproof.
- Highly corrosion-resistant *Hastelloy* "C" disc and body seat.
- Narrow-bearing, tapered seating faces break down hard deposits . . . give tight closure.

Globe pattern available with screwed ends, ½ to 2 in.; with flanged ends, ½ to 6 in.; angle pattern available with screwed or flanged ends in sizes ½ to 2 in.



2 STAINLESS STEEL VALVES— gate, globe, and swing check patterns

For maximum protection against corrosion

WORKING PRESSURES: 150 psi at 500 F—230 psi at 100 F

These valves are available in two types of high-alloy stainless steels—Crane 18-8 SMo and "Craneloy 20". Each type insures maximum stability of materials in contact with fluids for which it is recommended. In each pattern, Crane exclusive mechanical design combats the common causes of damage to high alloy valves—galling and scoring of seats; erosion and premature wear. Some of these features are highlighted here.

GATE VALVES—with Exclusive Split-Wedge Disc Seating—Seating load is transmitted equally to each disc half, assuring uniform pressure on seating surfaces. When unseating, the first turn of handwheel frees the discs—even when valve is closed hot and opened cold. Special guide flange on disc prevents drag across seats, while the free-to-rotate discs prevent concentrated wear, galling and seizing on seating surfaces. Bonnet joint gasket and stem packing are Teflon.

Screwed end gates in sizes ½ to 2 in.; with flanged ends, ½ to 12 in.

GLOBE AND ANGLE VALVES—Free Swivel Disc Saves Seat Wear—Seats in these valves last longer because the Crane free swivel disc-stem connection prevents seizing and galling on the seats. Disc stops turning on contact with body seat, and stem takes over all closing torque. Minimum clearance in disc-stem assembly prevents vibration and chatter. Modified plug type disc seating has superior resistance to erosion and scoring, and gives sensitive control for throttling.

Globe and angle valves with screwed ends in sizes ½ to 2 in.; with flanged ends, ½ to 6 in.

SWING CHECK VALVES—Y-Pattern Body and Straightway—Ideal work-mates for valves above, these checks feature high efficiency design throughout. Smooth interior assures unrestricted, low-turbulence flow-through. Simplified, wear-resisting disc mechanism makes positive closure on backflow. Easiest of check valves to service.

Y-Pattern with screwed or flanged ends in sizes ½ to 2 in. Straightway pattern, with flanged ends only, 2½ to 6 in.

FOR PULP AND PAPER MILLS

No. 1425 iron body, bronze disc. Sizes 4 to 20 in. Also available with 3% nickel iron body and 18-8 SMo disc in sizes 4 to 24 in. Quick-opening types with iron body and bronze disc, or 3% nickel iron body and Exelloy disc in sizes 4 to 16 in.

3 PULP STOCK VALVES with Crane Shearing-Action Disc

Clog-proof . . . self-cleaning . . . easy operating . . . full-port area . . . unrestricted flow . . . fast clean-out.

IRON BODY PULP STOCK VALVES

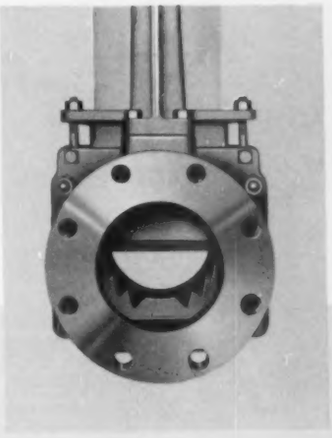
These valves are meeting all requirements of modern pulp-stock handling—as tested and proved in mills throughout the pulp and paper industry. Available in all-iron with 3% nickel alloy iron body and trim as detailed below—both handwheel and quick-opening lever types. Sizes: 4 to 24 in. Water working pressure: 60 psi.

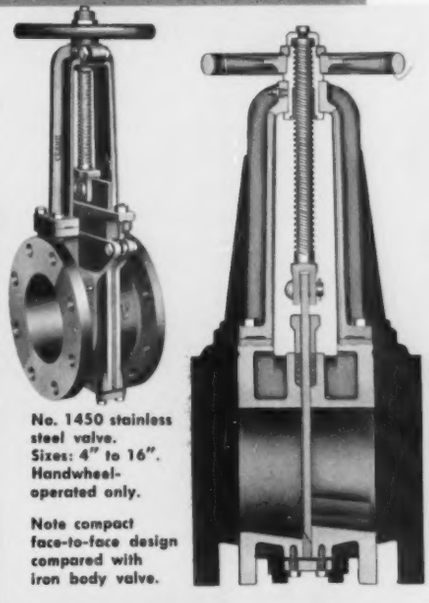
FEATURES FOR BETTER STOCK CONTROL

- Bonnetless design—2-piece body, bolted or welded.
- Circular ports—square center passage—provide full flow—no sections where clogging can occur.
- Fully guided Shearing-Action disc—long-wearing, knife-edged disc is precision guided for positive closure. Cutting edge is protected by lead filler seat in disc-stop holder.
- Extra rigid yoke—2-piece, bolted yoke prevents bearing surface distortion.
- Quick clean-out—simply remove disc-stop holder or clean-out plate.

Crane Shearing Action

Note the specially designed notches in outlet half of body. Combing effect of notches on fibers helps disc to shear them cleanly and to seat completely.





No. 1450 stainless steel valve. Sizes: 4" to 16". Handwheel-operated only.

Note compact face-to-face design compared with iron body valve.

STAINLESS STEEL PULP STOCK VALVES

For stock lines where corrosion is a problem, you'll want these valves with body and disc of Crane 18-8 SMo stainless steel, and Exelloy stem. Recommended for handling sulphite stock . . . sulphate unwashed stock . . . stocks to be kept free from contamination . . . caustic extraction . . . soaking sections in bleach plants, etc.

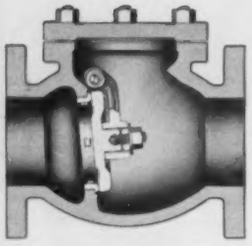
STRONG—LIGHT WEIGHT—NARROW FACE-TO-FACE

These valves feature less bulk, reduced weight and dimension—they're 35% lighter than iron body valves without sacrificing strength or rigidity. Face-to-face dimensions are much narrower. (See adjoining illustration). Ideal for use with light wall, stainless steel stock lines. All sizes have the Crane shearing-action disc that cuts through pulp fibers to seat completely.

SEE NEXT PAGE →

4 3% NICKEL ALLOY CAST IRON VALVES – Gate and Swing-Check Patterns for Low-Cost Corrosion Resistance on Alkaline Liquors

WORKING PRESSURE: 12 in. and smaller—200 psi cold water, oil, gas.
14 in. and larger—150 psi cold water, oil, gas.



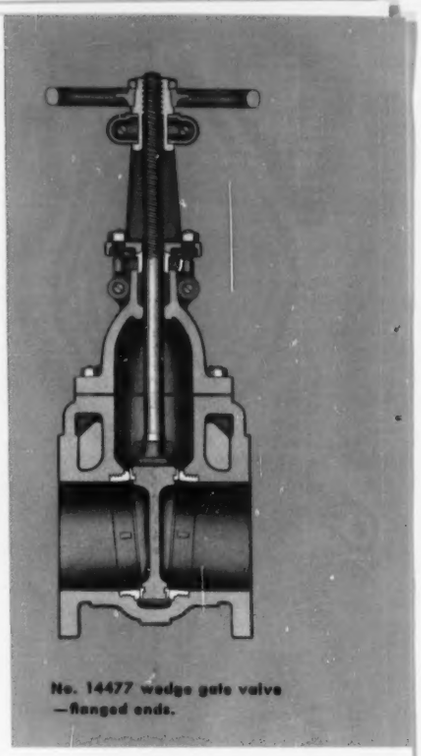
No. 14493 swing-check valve —flanged ends.

This metal—Crane 3% nickel alloy iron—was developed especially to extend the usefulness and economy of cast iron valves in handling process fluids.

At but slightly higher cost, Crane 3% nickel iron valves provide substantially better resistance to corrosion than ordinary cast iron, and they have comparable physical properties. Efficiency is increased highly with Crane 18-8 SMo (Type 316), stainless steel trim.

In gate valves the stem, disc rings, and body seat rings are Crane 18-8 SMo. In the check valves, the body seat ring, disc, hinge and hinge pin are 18-8 SMo.

Both gate and check valves are made in 2- to 18- in. sizes, with flanged ends only.



No. 14477 wedge gate valve —flanged ends.

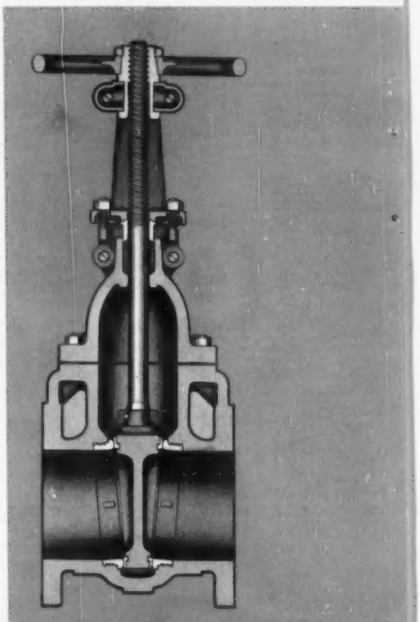
5 NI-RESIST CAST IRON GATE VALVES Most Economical for Soda and Sulphate Pulp Processing

WORKING PRESSURE: Screwed valves—225 psi cold water, oil, gas.
Flanged valves—200 psi cold water, oil gas.

Ni-Resist valves regularly produced by Crane are a copper-free* alloy cast iron containing approximately 20% nickel and 2% chromium. In physical characteristics, they're comparable to ordinary cast iron, but in resistance to wear, erosion, and corrosion mainly, Ni-Resist valves are much superior. They can save you the expense of stainless steel valves.

Crane further fortifies these valves against corrosion with 18-8 SMo trim in all parts in contact with fluid. Construction throughout is typical Crane high quality for durable, trouble-free service.

*(*Type 1 Ni-Resist valves made to order*)



No. 1671 Ni-Resist gate valves with bolted bonnet joint—sizes 4 to 12 in.—flanged ends only. With clamp type bonnet joint: screwed valves, ½ to 2 in.—flanged valves, 1 to 3 in.

Free Literature!

Get the complete story on all valves in this Crane line of maintenance-savers. Ask your Crane Representative for copies of these bulletins, or write to the address below.

- Crane Pulp Stock Valves—Bulletin AD-2156
- Crane Ni-Resist Valves—Bulletin AD-2047
- Crane 3% Nickel Alloy Valves—Bulletin AD-2313
- Crane Chlorine Valves—Bulletin AD-1976
- Crane Stainless Steel Valves—Bulletin AD-2411

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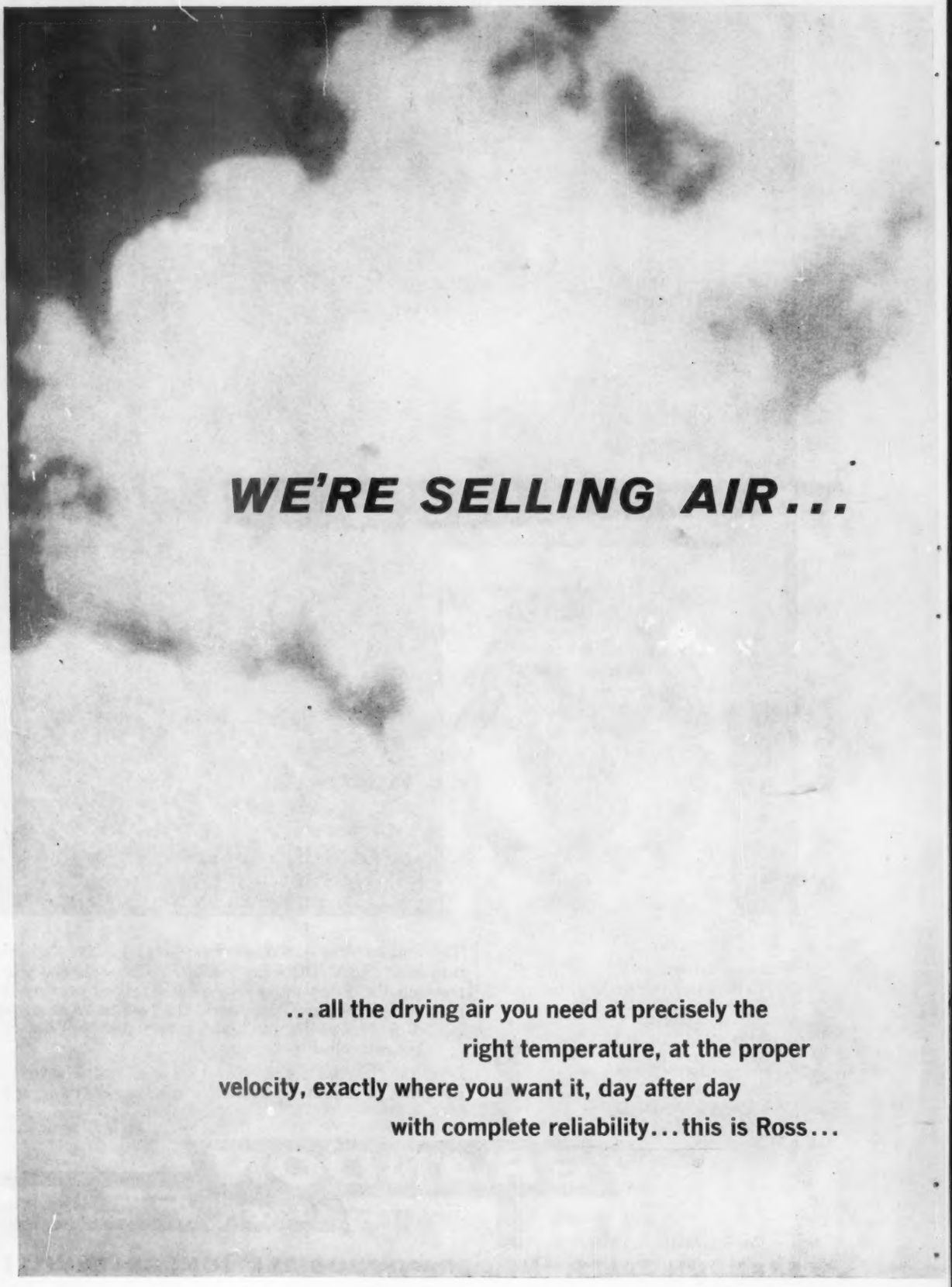
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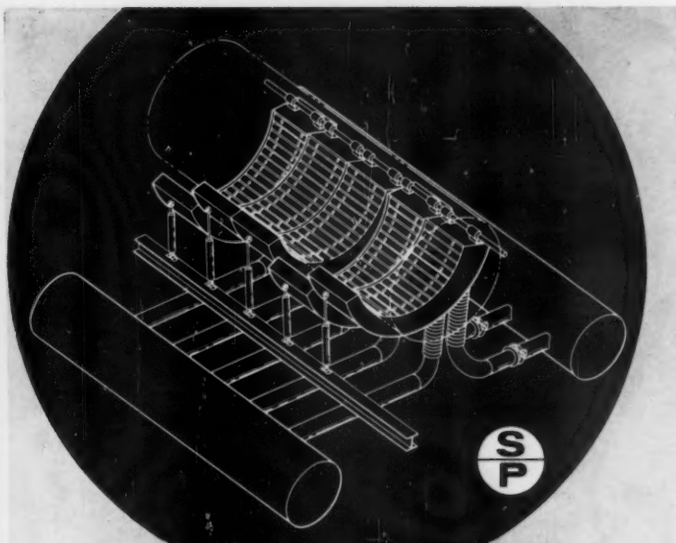

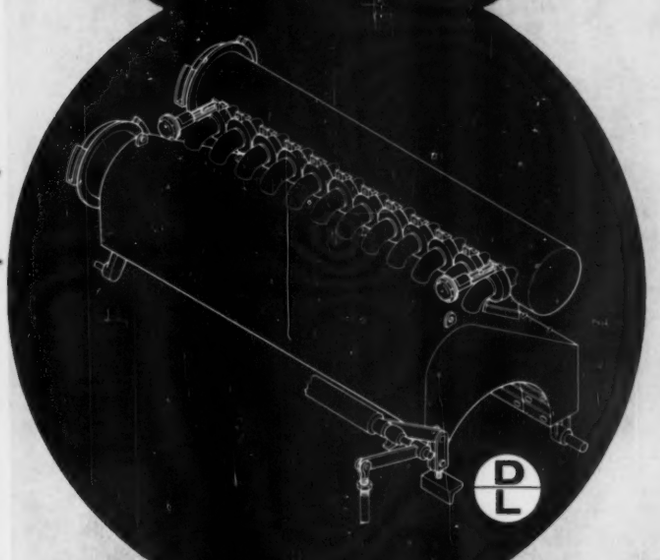

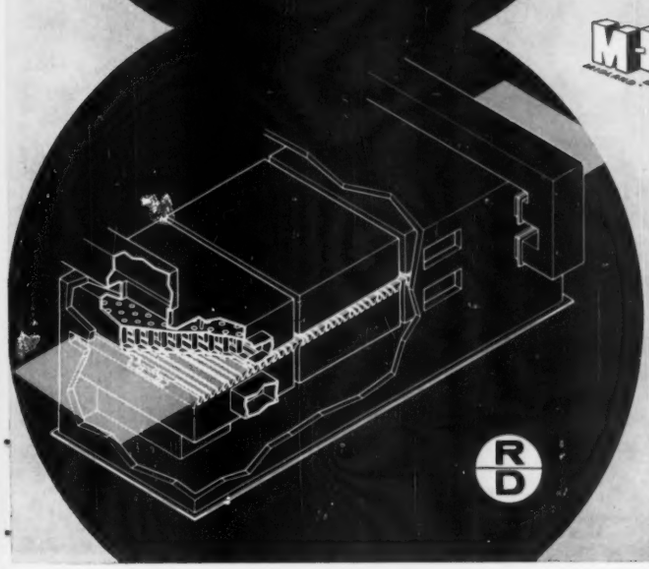

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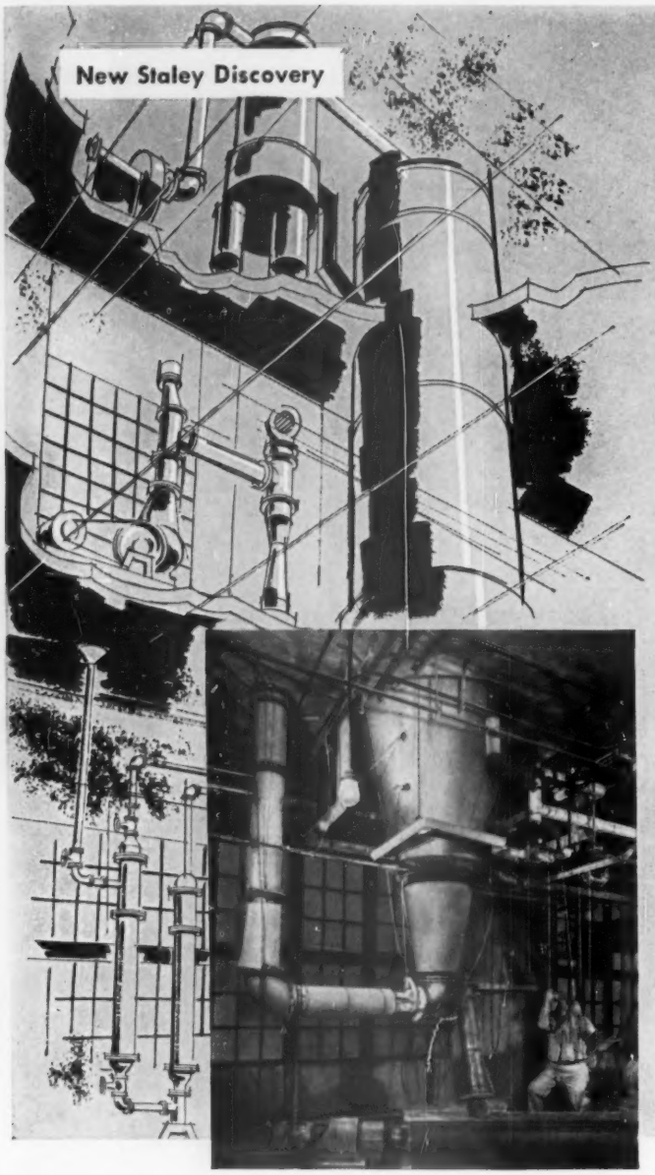

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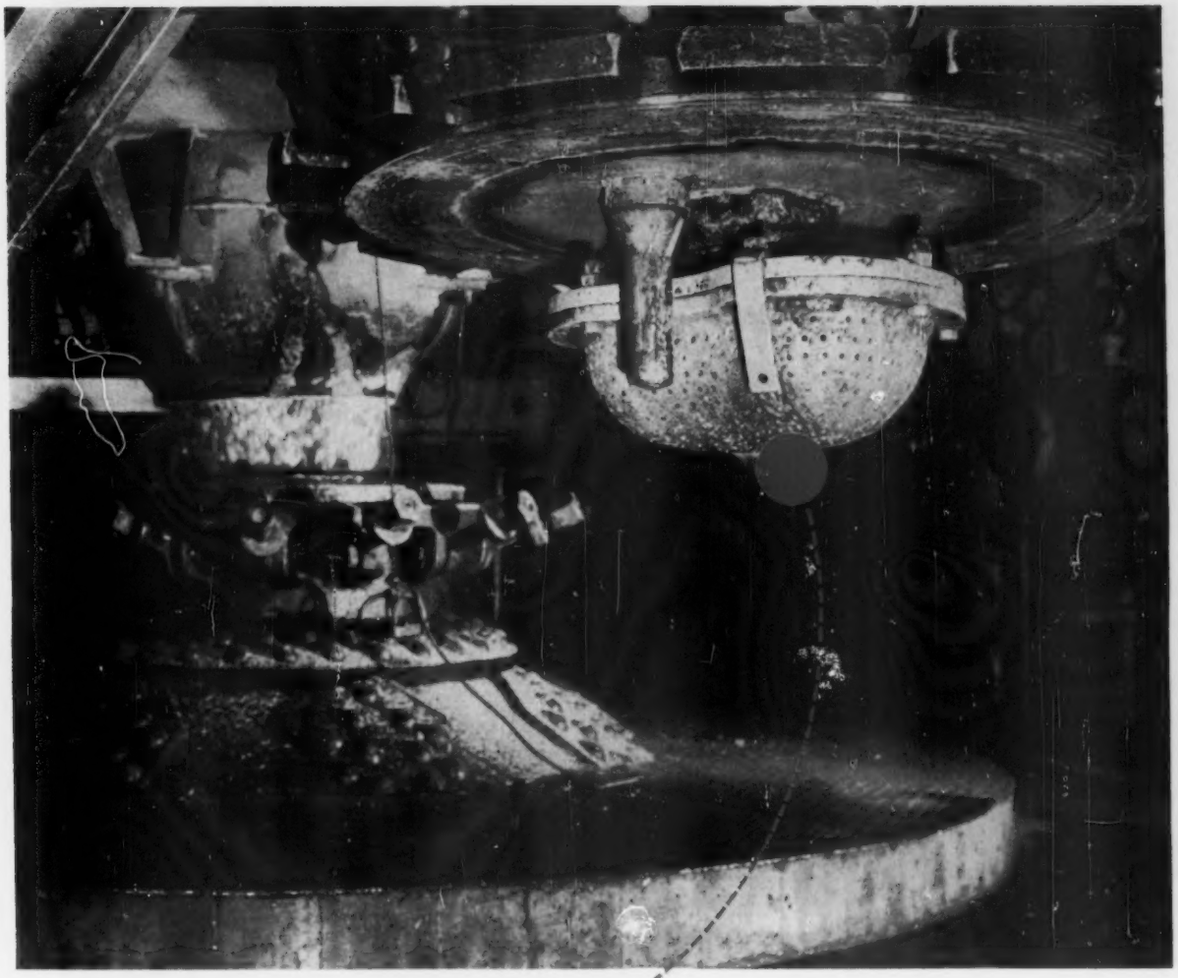

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This *ESCO* Alloy 45S top digester relief strainer casting is still resisting the corrosive attack of sulphur dioxide, acid fumes and steam at 280°F. and 80 psi. after 28 years of continuous service. This is but one of many, many testimonials that demonstrate the thorough understanding of pulp mill requirements by *ESCO* metallurgists.

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B&W Two-Drum Stirling Boiler for Union Bag-Camp Paper Corporation will burn unhogged bark, natural gas, and oil to generate steam for power and process requirements of Savannah, Georgia, Mill.

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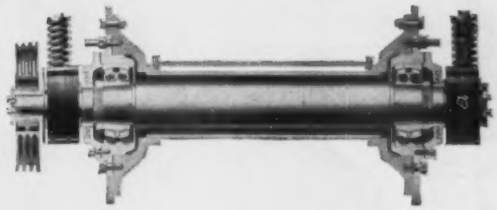
LINK-BELT "CA" double-deck vibrating screen separating oversize chips, slivers and sawdust from wood chips. Note the full loading and rapid clearing of the top deck. This screen can handle up to 2000 cu. ft. of chips per hour.

Powerful LINK-BELT "CA" vibrating screens accurately sort slivers, sawdust and oversize pieces



THE grease-lubricated, completely enclosed two-bearing vibrator, above, is the reason why Link-Belt "CA" screens provide fast, precise chip separation. Its smooth, Concentric Action imparts even, circular motion to every square inch of the screen decks . . . assures lively tumbling of every particle. And its unbalanced weights are easily adjusted to the amplitude of highest efficiency.

Besides rapid, sure stratification, Link-Belt "CA" screens offer the economy of overall rugged construction. Frictionless, labyrinth seals protect self-aligning roller bearing from dirt and abrasive dust. Stress-relieved decks are riveted to heavy side plates to form rigid box assemblies.

For full details on "CA" vibrating screens, call your Link-Belt office. Or write for Book 2777.

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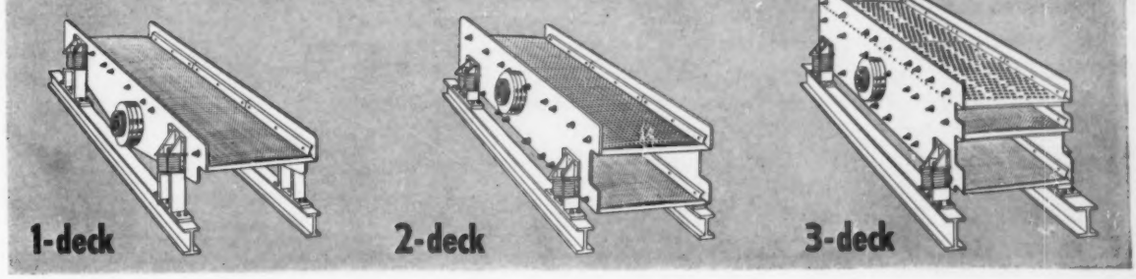

You'll get extra strength for all your lines when you add Accostrength Resin to your process—especially in cases where critical specifications must be met.

And, Accostrength gives you 3 additional benefits...

1. Accostrength improves wet web strength—minimizes costly paper breaks in the wet end of the machine. Customer runs have proved this too.

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3. Accostrength improves draining on wire—therefore requires less steam in the dryers permitting machine speedup and increased paper production. Another money saving feature!

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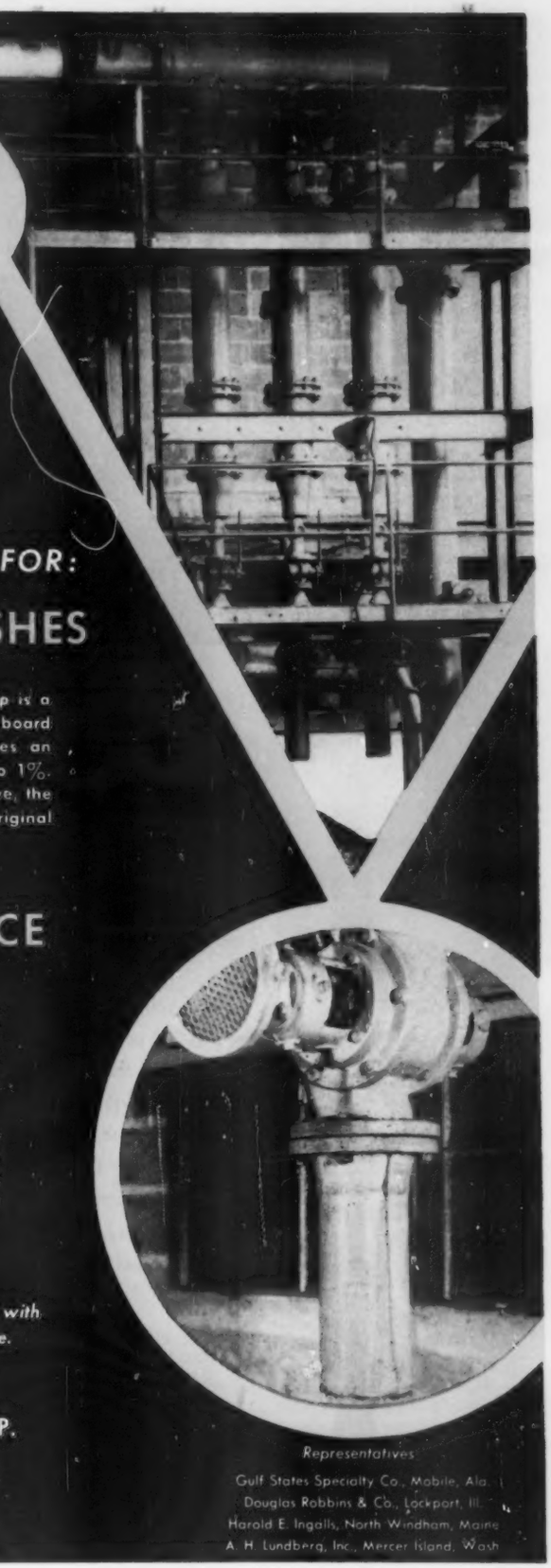

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- ☐ Optimum bearing spans, based upon considerations of bearing loads and tolerable shaft deflections?

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This 250,000 gallon Watersphere built by CB&I is 41 feet to the bottom.

Foundation space requirements for CB&I Waterspheres are considerably less than for other types of elevated tanks offering comparable capacity. This feature was a prime factor in solving a prominent pulp mill's recent water storage problem.

Large capacity (250,000 gallons) was needed. However, the ground area available for foundation purposes and erection was severely limited. A CB&I Watersphere was the logical choice. It solved the space problem and met every other requirement of the job.

The Watersphere is a product of CB&I's *coordinated services* . . . a single source and responsibility for engineering, fabrication and erection. The result is craftsmanship in steel, skillfully developed over seven decades of experience. Write today for complete information.

The Watersphere and its "big brother", the Waterspheroid are graceful, elevated steel water storage tanks of modern design. An illustrated brochure providing complete design and construction data is available. Write for a copy, today. No obligation, of course.

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PP31

General Electric Announces Newest In The Complete Line Of Adjustable-Speed Drives

PARMATIC SPEED VARIATOR...newest in General Electric's complete line of packaged adjustable-speed drives . . . provides greater machine flexibility, better quality control, higher output and efficiency.

STATIC POWER

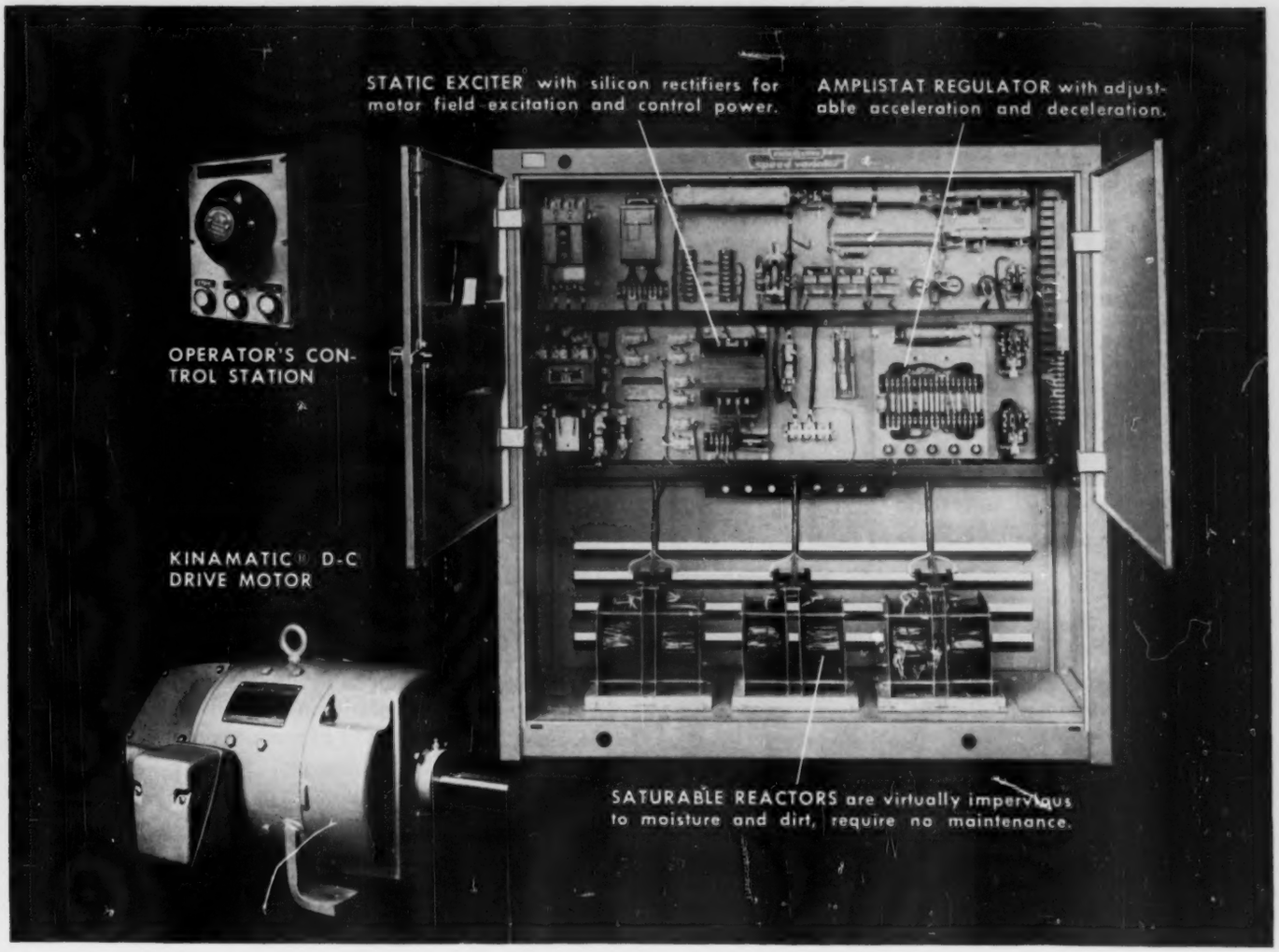
for less maintenance, less downtime, added profit. New excitation and power conversion systems have no rotating parts. Sealed silicon rectifiers and saturable reactors need no warm-up, virtually eliminate power unit maintenance.

25% SMALLER

for easier installation. Reliable, long-life G-E components are factory assembled in compact, space-saving power unit, wired and tested before installation to assure accurate control, reduced installation time and expense.

50% LIGHTER

for lower shipping and handling costs. New Speed Variator meets industry's demand for lighter, more powerful drives—packs more power, weighs 50% less than other drives of comparable rating, 2000 lbs less in 100-hp ratings.


STATIC EXCITER with silicon rectifiers for motor field excitation and control power.
AMPLISTAT REGULATOR with adjustable acceleration and deceleration.
OPERATOR'S CONTROL STATION
KINAMATIC® D-C DRIVE MOTOR
SATURABLE REACTORS are virtually impervious to moisture and dirt, require no maintenance.

FIELD PROVEN

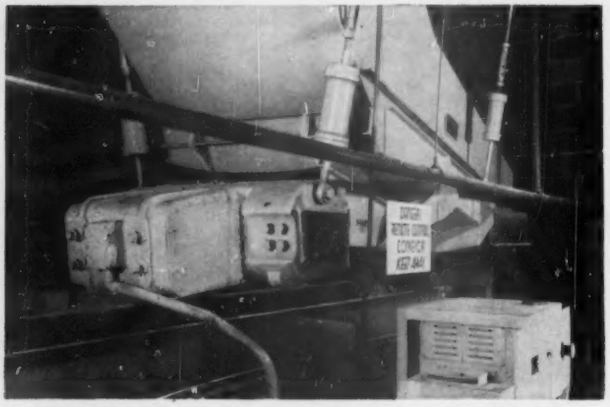
by two years' impressive on-the-job performance in several hundred installations in 15 industries. Experience indicates high operating efficiency, lower cost installation and maintenance for a greater return on your investment.

- **GOOD SPEED REGULATION:** 5% with 100% load variation. Closer regulation available with modification.
- **WIDE SPEED RANGE:** Standard Parmatic Speed Variator provides 8 to 1 range or wider if required.
- **RESISTS CONTAMINATION:** Saturable reactors and hermetically sealed rectifiers resist dirt and moisture.
- **QUIET AND VIBRATIONLESS:** New power unit design eliminates noise and vibration—expands drive versatility.

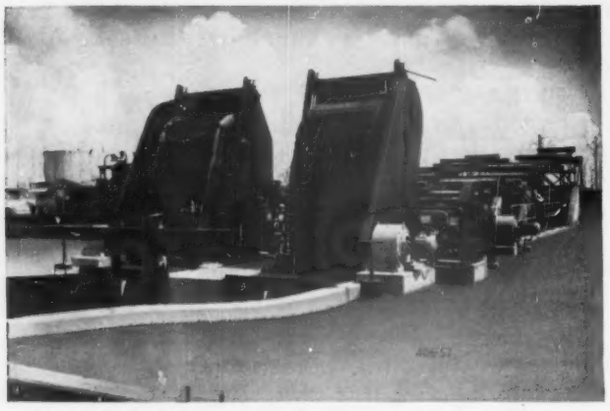
Limitations: G-E Kinamatic Speed Variator with motor-generator set is recommended for applications requiring power absorption for stopping or overhauling loads. *For more information,* call your General Electric Sales Engineer, or write for GEA-7012, Section 821-1, General Electric Company, Direct Current Motor and Generator Department, 3001 East Lake Road, Erie, Pennsylvania.

GENERAL ELECTRIC

Jeffrey belt conveyors transport wood chips to storage towers . . . move material to giant digesters as needed for production of chemical cellulose at Rayonier's Jesup plant.



Jeffrey vibrating feeders automatically control flow of materials in a wide range of processing operations. Here, wood chips are metered from a remote-control location.



Jeffrey bark and grit removal equipment for clarification of processed water.

when they expanded this chemical cellulose plant, they ***re-ordered*** ***JEFFREY*** *equipment*

RAYONIER'S new plant at Jesup, Georgia, is a twin to the plant built there in 1954. Each has the capacity to produce over 300 tons of chemical cellulose per day. The remarkably low-cost production facilities were designed and constructed by Ebasco Services Incorporated.

Duplication of the original mill indicates the satisfactory performance realized with the original equipment . . . including Jeffrey vibrating feeders, belt conveyors, bark and grit removal equipment.

Planning to expand your production? It will pay you to call in Jeffrey. For information on Jeffrey equipment for your requirements write The Jeffrey Manufacturing Co., 809 North Fourth Street, Columbus 16, Ohio.

JEFFREY

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"My new Homelite is the finest saw I have ever used"

Another user testimonial for HOMELITE 7-21C

7 21 C

Mr. Clarence L. Tucker of Sandpoint, Idaho is a man who knows what he wants from a chain saw and he also knows that when you cut big timber, it pays to buy the best . . . the Homelite 7-21C.

With a gear ratio of 2.8 to 1, the 7-21C has all of the extra lugging power you need to fell trees up to 7 feet in diameter at speeds that cut through 20" trees in 18 seconds. Its balanced 21 pounds (less bar and chain) make it easy to handle on the job, easy to carry to the job. Big fuel tank lets you cut longer between refuelings.

Famous Homelite short-stroke engine and quality features reduce maintenance and down-time. It adds up to more cutting time and greater profits for you.

PROOF — In his letter Mr. Tucker had this to say: "The new Homelite is the finest saw, bar none, I have ever used. I have used three other makes and would place my Homelite against any of them for cutting."

Ask your Homelite dealer for a free demonstration of the 7-21C and find out for yourself. And be sure to see the full Homelite quality line of chain saws for professionals.

As little as $6.10 weekly after small down payment

- **only 21 pounds less bar and chain**
- **fells trees up to 7 feet in diameter**
- **straight blades 14" — 60"**
- **16" plunge-cut bow**
- **cloaring bar, brush cutter**

Find Your Homelite Dealer In The 'Yellow Pages'

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HOMELITE

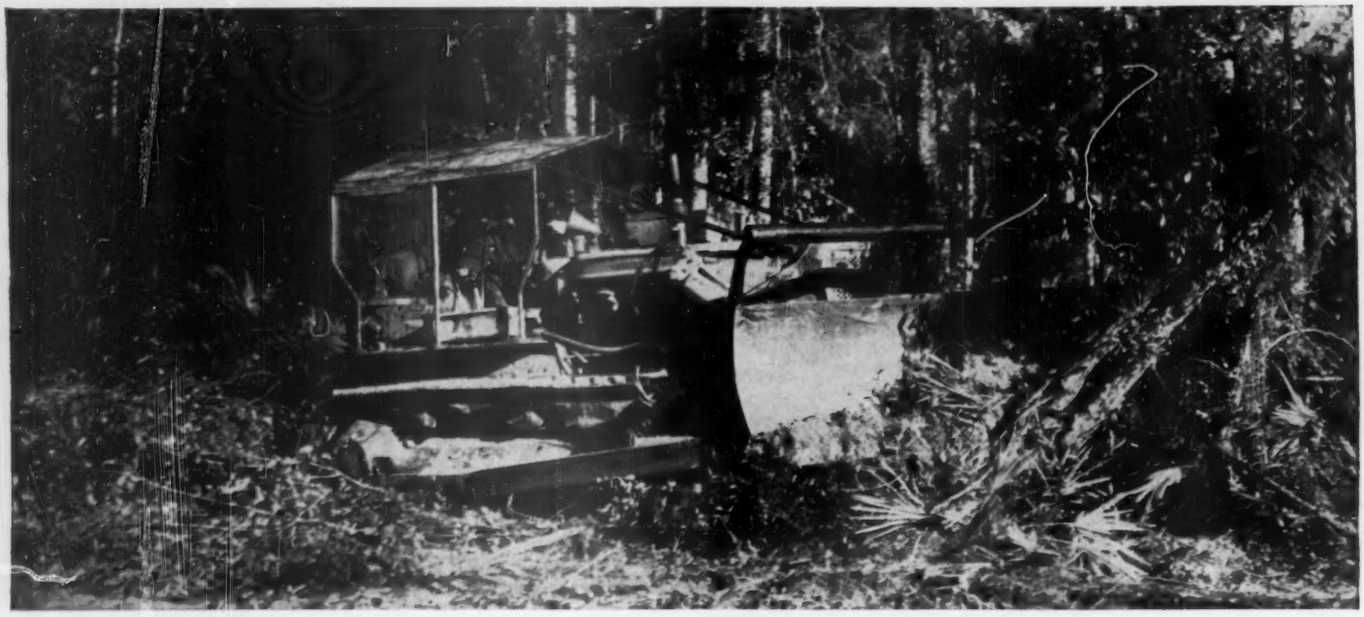
A DIVISION OF TEXTRON INC.

7712 RIVERDALE AVE., PORT CHESTER, NEW YORK

D6 WITH K/G BLADE

CLEARS AN ACRE AN HOUR!

For forest site preparation that involves tree and stump shearing and windrowing, the D6 with Rome K/G Blade can increase production over a straight blade 30% to 40%. The K/G Blade mounts on a "C" frame at a 28.5 degree angle with the tractor. A sharp, armour-plate stinger projects 30" beyond the blade. This is the business end. It slices through small trees in a single pass, downs large trees in a few passes.



An acre an hour is good production in this going. But just as important is the *way* the D6 with a Rome K/G Clearing Blade handles the job. Forester Wess Whiddon of the Weaver-Loughridge Lumber Co. in Boyd, Florida, makes this comment on its performance: "The K/G Blade is rugged. It is doing more than we expected. It piles debris very well—does not take topsoil. You can't beat a D6 for this type of work."

Weaver-Loughridge has holdings of 100,000 acres. The company clears and plants about 1,500 acres a year. In going like this, it uses this Cat D6 Tractor with K/G Blade for top production. Under other conditions, the D6 is employed with a root rake or angle 'dozer. For building fire lines, the D6 pulls a fire plow. The company also has two other D6s with Rome Harrows and a D4 for fire suppression work.

Forest site preparation, of course, is now an accepted practice. The question is: which machines and methods do the best job? One thing is sure—the machines must be rugged. On that score, Cat Diesel Tractors stand out because they stand up. For example, the D6 has the exclusive oil clutch. Many have given up to 2,000 service hours without adjustment under the toughest going. And Cat Engines burn economy-type fuels without fouling for a 3-way saving—economical fuel, less of it and minimum maintenance.

As for methods, Cat Diesel Tractors have been teamed with many different tools for such phases of site preparation as tree and stump shearing, raking and windrowing, chaining, stump treatment and harrowing. On-the-job cost and data figures are available on their performance. Ask your Caterpillar Dealer to show them to you. Let him help you select the machines that do the most economical job for your operation!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

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HEAVY-DUTY WOODS EQUIPMENT FOR THE HARD WORK

PLASTIC CHIP CARRIER traveled 50 miles down fast-running river without damage. John Shemley, looking inside ball, is vice president and general manager, Pacific Plastic-Glass Developments Ltd., fabricators of the container.

New Way to Transport Chips:

Seal them in plastic or rubber ball and float them down-river to pulp mill. This one carries 250 cu. ft. of chips

● In Western Canada, where the forest industry has a problem in logistics that in the past hasn't been simple to solve, two pulp companies are doing just that—using the fast-flowing Fraser River to deliver chips from sawmills and plywood plants, many miles away, to tidewater pulp mills. Admittedly, this somewhat revolutionary technique is still in the experimental stage.

Pearson Stewart

GEORGE PEARSON and ANGUS STEWART, both of Crown Zellerbach Canada's wood supply department, handled experimental runs.

If proven successful on a large scale, it could be worth millions of dollars in transportation savings to mills which may be served by river transport in all parts of the world.

A few months ago, three men met in the Victoria, B.C., office of Deputy Minister of Forests R. G. McKee. In addition to Mr. McKee, there were Hugh J. Hodgins, vice president timber, Crown Zellerbach Canada, and Warren Wood, executive of the Cypress Mining Corp., of Los Angeles, which operates two sawmills in California and for a while contemplated entry into the timber business in British Columbia.

The three men were discussing a somewhat baffling situation. In British Columbia all pulp mills are on the coast and while they now are getting most of their chips, other than those produced from their own logs, from sawmills and wood processing plants on or close to salt water, they must look ahead to mobilizing the potential chip supply of interior sawmills, of which there are hundreds. But to do that would be costly, involving truck or railroad hauls too long to be economic. A natural "highway" between these lumber operations and the pulp mills is the great Fraser River, but its use for transporting chips has been out of the question because no vessel could navigate its upper reaches. Bundled logs have in recent years negotiated the treacherous Hell's Gate Canyon, but certainly no barge or towboat.

Plastic Chip Carrier

It was the mining man, Warren Wood, who, curiously enough, suggested as a sort of wild idea that maybe chips could be loaded into some form of plastic or rubber container and sent bobbing along over

the Fraser to the coast.

Mr. Hodgins didn't pass off the suggestion lightly. "You may have something there," he said, reflectively.

Results of Trials

When Mr. Hodgins returned to Vancouver head office he called in company engineers and asked them to go to work on a design for a giant fibreglass ball big enough yet light enough to carry an experimental load of chips. A few weeks later, an 8-ft. diameter sphere, which the company stressed was an experimental prototype, was filled with about 1¼ units of chips (about 250 cu. ft.) and released in the Fraser River at Boston Bar.

The ball floated some 50 miles down the river, through swirling Hell's Gate, and was picked up just below Hope, by prior arrangement, by Canyon Log Drive & Booming Co., which in the past has specialized in handling log bundles sent down the river by upstream loggers.

The ball was bruised, but the chips were completely dry. Later, the ball was released at Quesnel, further up the river, to try for a 300-mile run to Hope. It grounded on a sand bar about 50 miles downstream from Soda Creek. Further runs are planned, and Mr. Hodgins hopes that eventually it will be possible to develop a practical ball that will carry four or five units of chips, perhaps even more. The size is limited by the fact that the empty spheres, dismantled, will have to be returned to the sawmills by truck or railroad.

Two Companies Try Out Balls

The prototype was built to a design worked out by Crown Zellerbach Canada timber division under the direction of Mr. Hodgins and the wood department manager, Ernie Pedersen. It was fabricated to CZ specifications by Pacific Plasti-Glass Developments, Ltd., Annacis Island, B.C., Canada, at the mouth of the Fraser. Experimental runs were handled by Angus Stewart and George Pearson of the wood supply department.

The sphere is made of ⅛ inch fibreglass, painted red for ease of visual observation. It was fabricated in quarters, two being joined to form fixed halves. These semi-spheres are flanged to give strength and to permit the two halves to be nested for handling and transportation on land. The halves are joined by steel bolts. Weight empty is about 200 lbs. One half has an 18-in. diameter hatchway for loading and unloading the chips.

Further experiments, possibly using different materials, shapes and sizes, are contemplated.

Puget Sound Pulp & Timber Co. of Bellingham has also been doing some experimenting with a similar technique on the Fraser River, using rubber bags fabricated by Firestone Tire & Rubber Co.

New Southern Ry. Chip Car Replaces 2½ Standard Cars. 30-Min Unloading

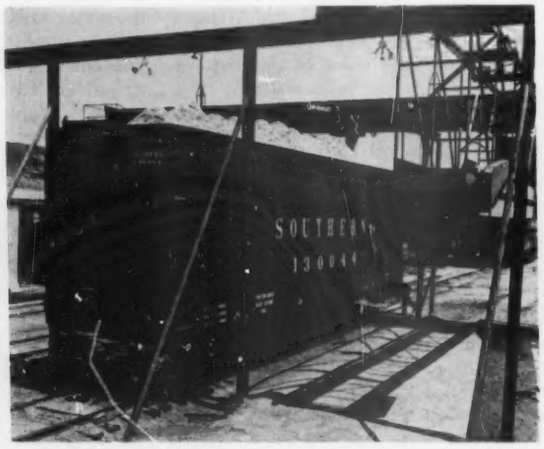
Railroading's latest entry in the race for wood chip traffic is a lightweight, extra-height, side-door freight car recently announced by the Southern Ry. System. Big feature is a mechanical unloader that sharply reduces in-yards time for rolling stock.

The new car holds 2⅛ times the chip volume of standard hopper cars. It has an inside length of 54 ft., is 16¾ ft. in height above the top of the rail and 11 ft. in width. With its capacity of 6,800 cu ft., the car will lead approximately thirty-five 190-cu. ft. units.

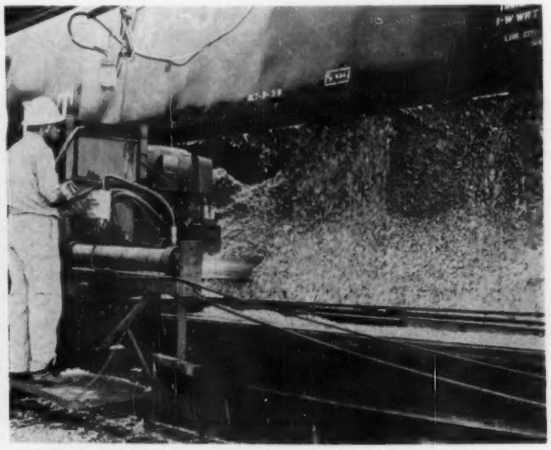
Unloading Time Saver

Cars are normally loaded either by an overhead conveyor or by a blow-pipe system at the chipping plant.

Unloading time is said to be slashed



SUPERSIZE WOOD CHIP CAR developed by Southern Railway holds 6,800 cu. ft. (or 35 units) of chips, 2½ times volume of standard hopper cars.



SWIVELING ARM OF TRAVELING UNLOADER, specially developed by Southern, plows chips into pit. Total unloading time is 30 mins. or less.

with the new Southern-designed mechanical unit that travels on a beam along the unloading track. The swiveling boom of the unloader angles through the chips and rakes them into a pit beneath the track. It can clear a car as fast as the pit conveyor can move the chips into the mill.

(The unloading device is not patented, and Southern will make the design available to any potential user. It has been estimated that the cost of installation can be recovered in reduced freight rates and savings involved in plant handling. According to B. E. Young, asst. to the president of Southern, "the cost of the unloader at the present time is $12,000. This is the base cost of manufacture, no allowance having been made for profit, etc.")

Two Equals Five

Reduced freight charges apply to full loads. Two of the new cars move a chip volume normally requiring five ordinary hopper cars.

The giant unit has four doors, two along the lower half of each side. Any door may be raised singly; or two, three or four doors may be raised simultaneously for easy unloading.

Gravity-loaded chips are shipped and billed on a unit basis Southern allows a 20% reduction on the regular rate for all units in excess of 25 loaded in a single car.

Reduction in Dead Weight

In designing the car, advantage was taken of the fact that wood chips stand almost vertically without support and accordingly exert little pressure on the sides of a car. Among other advantages, this permitted the construction of a high car body of thin-gauge steel with consequent sharp reduction in dead weight. Further weight reduction, as well as provision for drainage, was obtained by utilizing perforated steel for the flooring. Side doors were used simply because side unloading was found to empty the car rapidly without need for car-shaking devices.

Visitors Call Wisconsin Growth Twice as Good as Sweden's

Growth on an industrial pine plantation in northern Wisconsin, U.S.A., was recently described as, "perhaps twice as good as Sweden." Speaking were two visiting foresters.

Daniel Zacco, asst. forest mgr., and Jorgen Nordin, district forester, with AB Iggesunds Bruk, Iggesunds, Sweden, were observing thinning methods while on a six-week tour of Canadian and U.S. forests. While in Wisconsin they viewed the plantation of the Mill div. of Owens-Illinois Glass Co. at Tomahawk and the state forest pine plantation at Star Lake. They were guided by Donald Austin, area forester for Marathon, a division of American Can Co., and William A. Sylvester, chief forester for Trees for Tomorrow Inc.

The Iggesunds firm owns 50,000 acres of Swedish forest land, 2,000 acres of which are in plantations. Chief products include pulpwood and saw logs. Half its annual yield is from thinnings.

Planting vs. Direct Seeding

Most reforestation in Wisconsin is done with tree-planting equipment, while in Sweden direct seeding has been in use for 50 years. In Sweden, according to Mr. Nordin, the ground is prepared by controlled burning and removal of humus. Direct seeding tried from time to time in Wisconsin has resulted in poor survival.

For many years Sweden has conducted intensive research in forest genetics. Seed orchards have been established from pine and spruce grafts. Mr. Nordin predicted that within 20 years all seed will come from the superior trees in these orchards.

Wisconsin undertook a similar program in 1948. A network of seed orchards was established. But, severe animal damage retarded the program.

More Contrasts Noted

In Sweden, Mr. Zacco explained, initial cleanings are made after 13 to 15 years. Commercial thinnings begin at age 30 to 35. The forests are eventually clear-cut, the better stands at 80 years, the average being 110 to 120 years.

Other differences were noted by Mr. Zacco. Pure conifer stands are planted in Wisconsin, while in Sweden birch and other deciduous trees are grown along with the conifers to improve the soil.

Birch is the primary hardwood species in Sweden, while in Wisconsin that rank is held by aspen. Mr. Nordin explained that in Sweden aspen serves as a secondary host for insects and disease that attack conifers, and foresters make extensive use of herbicides to eradicate it.

RESULTS OF THINNING RESEARCH are explained to visiting Swedish foresters by William A. Sylvester of Trees for Tomorrow (l) and Donald Austin of Marathon (r). The visitors are Daniel Zacco and Jorgen Nordin, both of AB Iggesunds Bruk, on a six-week tour of Canadian and U.S. forests.

Eight Developments in Forestry

are forecast for next quarter century by Kimberly-Clark executive at Canadian Institute's annual meeting

—Prince George, B. C.

The future of spruce in Canada's forest economy provided the theme for the annual general meeting of the Canadian Institute of Forestry, held this year for the first time in a relatively small western center—Prince George, in British Columbia.

In spite of the distance to be travelled by most of the delegates, Prince George, which ambitiously styles itself "Spruce Capital of the World", drew more than 300 delegates and their wives, all provinces of Canada and several states being represented.

Prince George's reputation isn't deceptive. Within a few miles of the city there are more than 600 sawmills, some of them admittedly small, and it is expected that within a few years pulp and paper will be among the area's principal products. The trend away from 100% lumber operation to pulp has already started, and tremendous impetus was given to it by establishment of North Western Pulp & Power's big bleached sulfate plant across the border at Hinton, Alberta.

Typical of what may be expected, Obed Lumber Co. at Edson, an area tributary to Prince George as well as to Hinton, has a capacity of some 30 mbf daily; it has no gang saw, but it does have a mechanical barker and chipper and it is profitably delivering pulp chips 50 miles by truck to Hinton.

As Ray Williston, B.C.'s minister of lands and forests, told the delegates: "The possibility of a pulp industry in this district is a most feasible one and would be a very attractive addition to our woods economy."

North of Prince George are extensive pulpwood forests and when the giant Peace River power development program goes ahead several pulp mills are expected to be built in that region.

CZ Man Heads Institute

Pulp and paper industry executives played an important part in the convention's program. Hugh J. Hodgins, vice president, timber, Crown Zellerbach Canada, was elected president, and one of the principal addresses was made by T. G. Wright, chief forester of Canadian Forest Products, which manufactures pulp at Port Mellon, Howe Sound.

Mr. Wright said that Canada's spruce-balsam forests extended over 250,000,000 acres and represented a volume of growing stock five times as great as the southern states.

"The Canadian spruce forest is being greatly undercut," said Mr. Wright. "Forest policy in Canada must be primarily directed toward the long-range objective of increasing the harvest from this magnificent resource. It is impossible to overcut the forest if every acre is kept at the highest level of productivity. This is the basic challenge to government and industry—to produce the maximum volume of wood, both from the forest and in the forest."

Technical Program: Kimberly-Clark Forecast

Technical papers were presented by foresters from as far east as Newfoundland, Bowaters Mersey Paper Co. being represented by R. S. Johnson, chief forester, with a paper on spruce cutting practices. Others from the east taking part in the program included Ed Bonner, chief forester, Spruce Falls Power & Paper Co.; A. L. K. Swirzer, assistant woodlands manager, Kimberly-Clark Corp. of Canada, Dr. J. L. Farrar, Abitibi professor at University of Toronto.

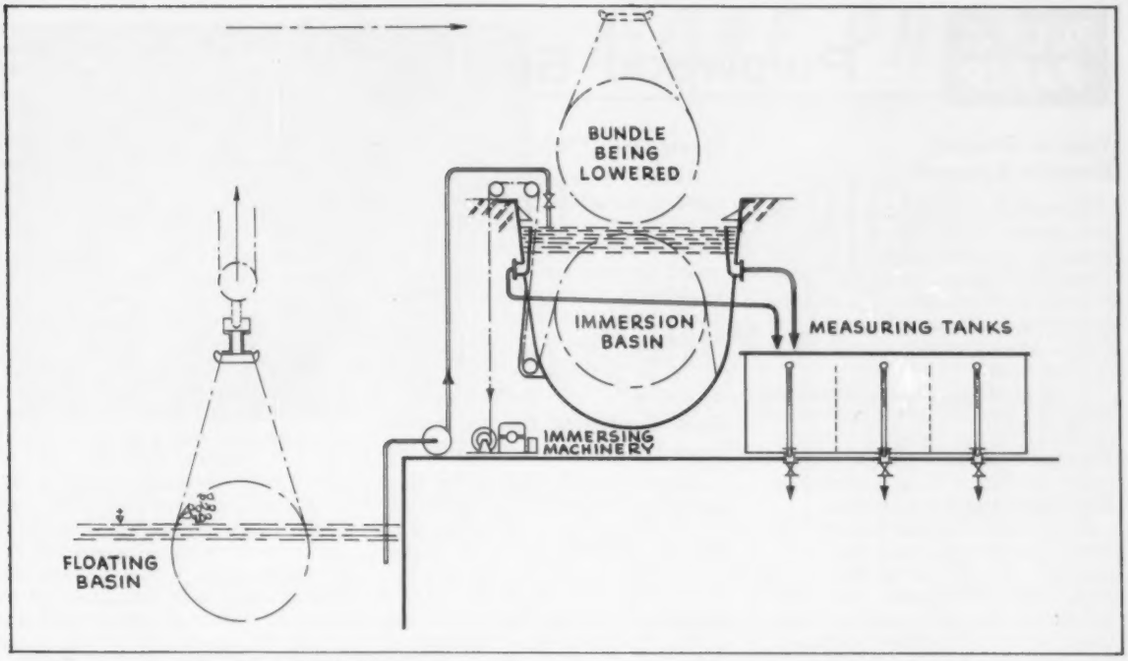
Speaking for an Ontario company which has made notable progress in forest management and spruce plantation, Kimberly-Clark's Swirzer forecast these developments for his company during the next quarter century:

1. Successful development of some stand treatments that may lessen dependence on planting.
2. Periodic cuts at possibly 20-year intervals which will result in salvaging potential mortality and thus realize a higher yield per acre.
3. Group cuttings where there are all-aged stands or patches of mature timber are intermingled with immature.
4. Salvaging stands that are windthrown or attacked by insects or disease.
5. Geneticists may produce superior, faster-growing strains with dense wood, long fiber, good form, disease and insect resistant.
6. Fire will quite likely be a common silvicultural tool if only to break down the slash and, in some cases, heavy organic layer, to facilitate planting.
7. Chemical release of the softwoods will be a common procedure.
8. Seed will all be secured from orchards where the lineage has been proven to produce superior progeny.

HUGH J. HODGINS, vice pres., timber, CZ Canada, heads Canadian foresters.

Best Seed Harvest On Record in B.C.

The B. C. Forest Service reports that the high elevation Douglas fir seed crop was the first really good yield since 1945. It is estimated that the 100,000,000 seedlings which the 4,500 pounds of collected seed will produce will maintain the normal Crown-land planting program for the next 10 years.



FLOW DIAGRAM of pulpwood measurement by water displacement at Joutseno-Pulp Oy.

A Method for Measuring Pulpwood

Use of water displacement theory achieves ±0.17% accuracy, it is claimed by Finnish mill

—Joutseno, Finland

● Joutseno-Pulp Osakeyhtiö, co-owned by Rauma-Repola Oy and Oy Kaukas Ab, has applied the ancient Archimedes' principle to pulpwood measuring.

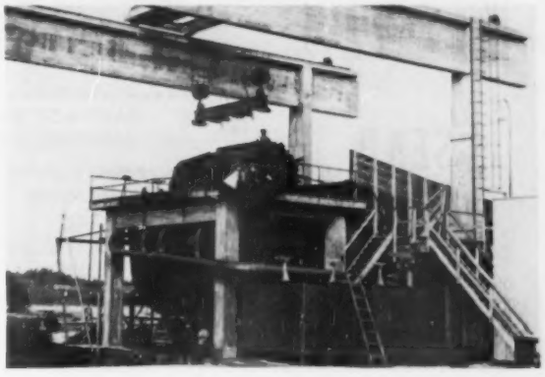
Measuring is done by immersing the bundle in a basin full of water and measuring the displacement.

All the water displaced by the bundle flows to a separate measuring tank which is divided, to increase accuracy, into three compartments (each 9 cu.m.). The outflowing water from the immersion basin first fills the first compartment. If the bundle has displaced more water, the second compartment begins to fill and, when it is full, the water flows to the third compartment. The solid cubic volume of the bundle can be read directly from the graduated glass gauges at the side of the compartments.

The measuring accuracy is ±0.17%, and this accuracy is unaffected by extrinsic factors (quality of the timber, etc.). Greater accuracy can easily be achieved by dividing the measuring tank into more compartments with vertical partitions, but the above degree of accuracy is considered adequate at Joutseno.

The measuring work is still carried out in the summer season only, as the freezing of the water in the winter causes difficulties. The measuring capacity is 3-4 bundles per hour, i.e. about 350 cu.m. per day (8 hours). Only one man is necessary for the measuring work. He manages all the extra work incurred in the measuring operation and notes the results.

Comparison of the measuring costs during the last and the present floating season showed that the measuring basin pays for itself in three years. This time, of course, would be shorter in countries with higher labor costs.



BUNDLE OF WOOD BEING LOWERED into the equipment at Joutseno, Finland, designed for new method of measuring pulpwood volume.

PULP & PAPER

Pulpwood Section

Yale to Conduct Genetics Research

Production of basic data on forest tree genetics is the aim of a research program recently announced by Yale Univ., New Haven, Conn. The study is being made possible by a $53,200 grant from the National Science Foundation. Announcement was by George A. Garratt, dean of forestry.

Francois Mergen, asst. professor of forest genetics and acting director of the Yale Forestry Research Center at Valhalla, N. Y., from 1955 to 1957, is to be in charge. Two graduate student assistantships are provided.

In the past, Professor Mergen said, "geneticists have centered their investigations around plants that were easily and conveniently cultivated. Because of this, the genetics of forest trees has been seriously neglected. . . . Thus the major concern of some of these (current) programs has been the improvement of the commercially important forest tree species, and not the basic data on forest tree genetics that the Yale project envisions."

Forest Laws, Practices

Forest laws—including recommended beyond-the-minimum forestry practices within the Douglas fir region—have been issued separately in pocket-size manuals for Oregon and Washington. These manuals compiled by the Industrial Forestry Assn. can be obtained from IFA hadquarters at 1410 S.W. Morrison St., Portland 5.

Ohio Continues Central States Lead; Lake States Down Sharply

Pulpwood production in the Central States continued its steady upward trend in 1958 with a harvest of 291,584 standard cords, the largest cut ever recorded. Gross value delivered at the mill was $3,597,000 and represented an 18% increase (43,854 cords) over the previous high set in 1957.

Ohio retained its position as the leading pulpwood-producing state in the region (Ohio, Indiana, Kentucky, Missouri, Iowa), with a harvest of 140,515 cords—48.2% of the total.

Hardwoods' increasing importance was evident. Soft hardwoods showed an increase of 23,137 cords (19%) over 1957 figures, while hard hardwoods were up 27,004 cords (27%).

The decline in coniferous production that began in 1957 continued last year. Output was only 6.5% of the total, with but 18,947 cords utilized—a 25% decrease from the year before.

Each of the three Lake States (Minnesota, Wisconsin, Michigan) showed a marked decrease in pulpwood production during 1958. Compared with the previous year, Minnesota was down 14%, Wisconsin 11% and Michigan 8%. Pulpwood shipped in from other states and from Canada showed the same general pattern, dropping off 15%. Imports from the western states broke off sharply, declining 37%.

All species except pine (which increased 18%) showed a decrease from the previous year. Although the cut of miscellaneous hardwoods was only slightly less than in 1957, other species declined rather sharply, birch was down 50%, spruce 29%, balsam fir and hemlock 23%, tamarack 11% and aspen 10%. Aspen, however, continues to be the leading pulpwood species.

Total receipts at Lake States mills were 3,114,000 cords, a decline of 12% from 1957.

Thorough Barking with Minimum Brooming

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In successful use since 1938, CARTHAGE BARKING DRUMS are made of massive 1⅛" plates that assure years of low-maintenance operation in this brutal service. Fluid drive results in smooth start and prevents back lash. Patented supporting shoe dampens shock loads – one of the many features that contribute to the exceptionally long life and low maintenance cost of the exclusive Carthage integral drum construction.

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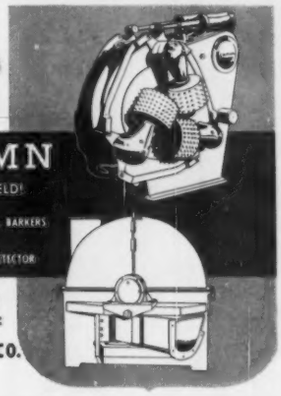

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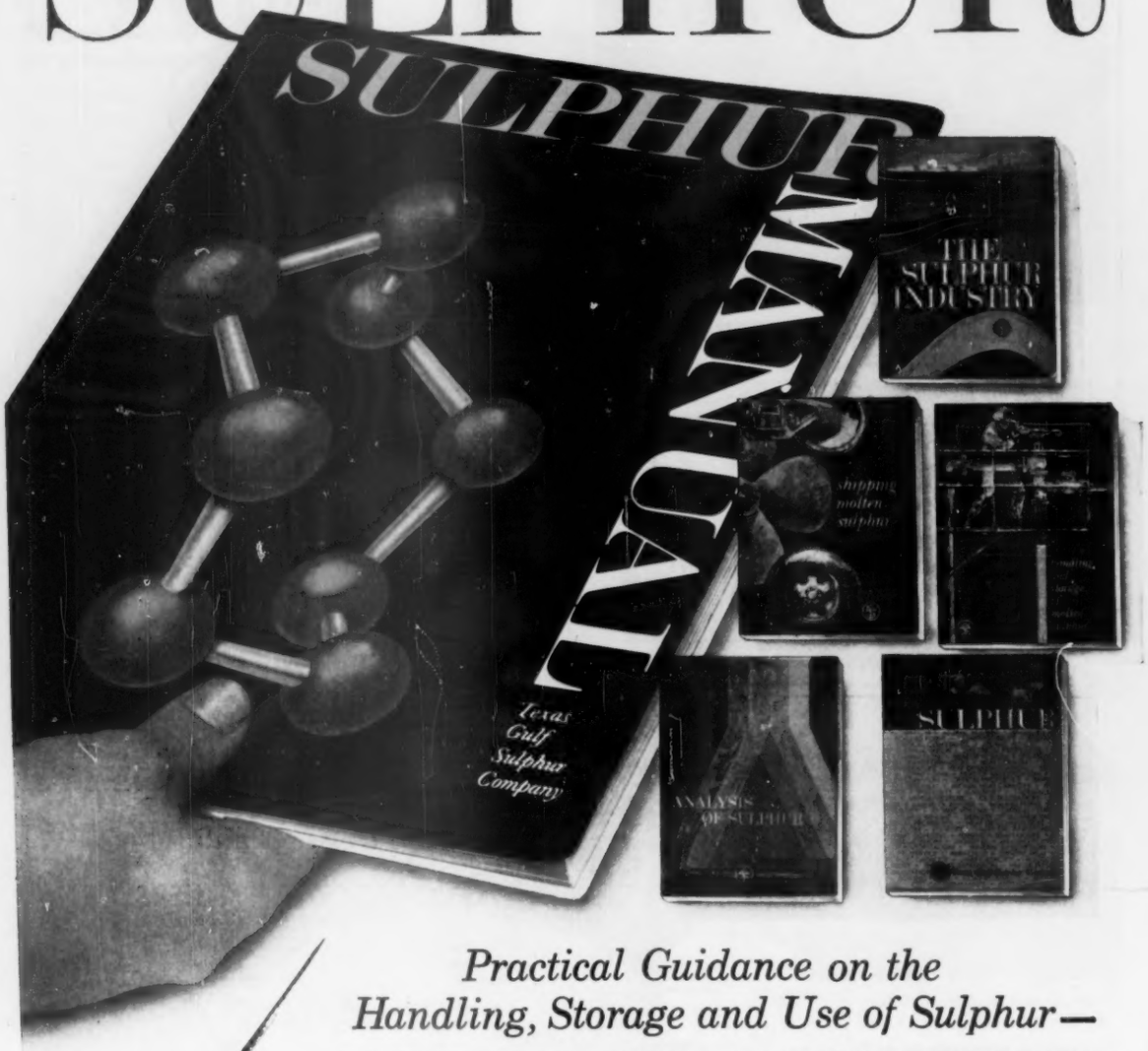

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SOLID OR MOLTEN

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IV – Analysis of Sulphur
Appendix – Physico-Chemical Properties of Sulphur

Old hands, accustomed for years to handling Solid Sulphur, will need little advice, if any...unless Molten Sulphur is to be in the picture for the first time. In this case, our experience with and knowledge of Molten Sulphur may be helpful.

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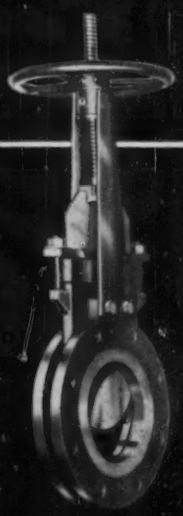

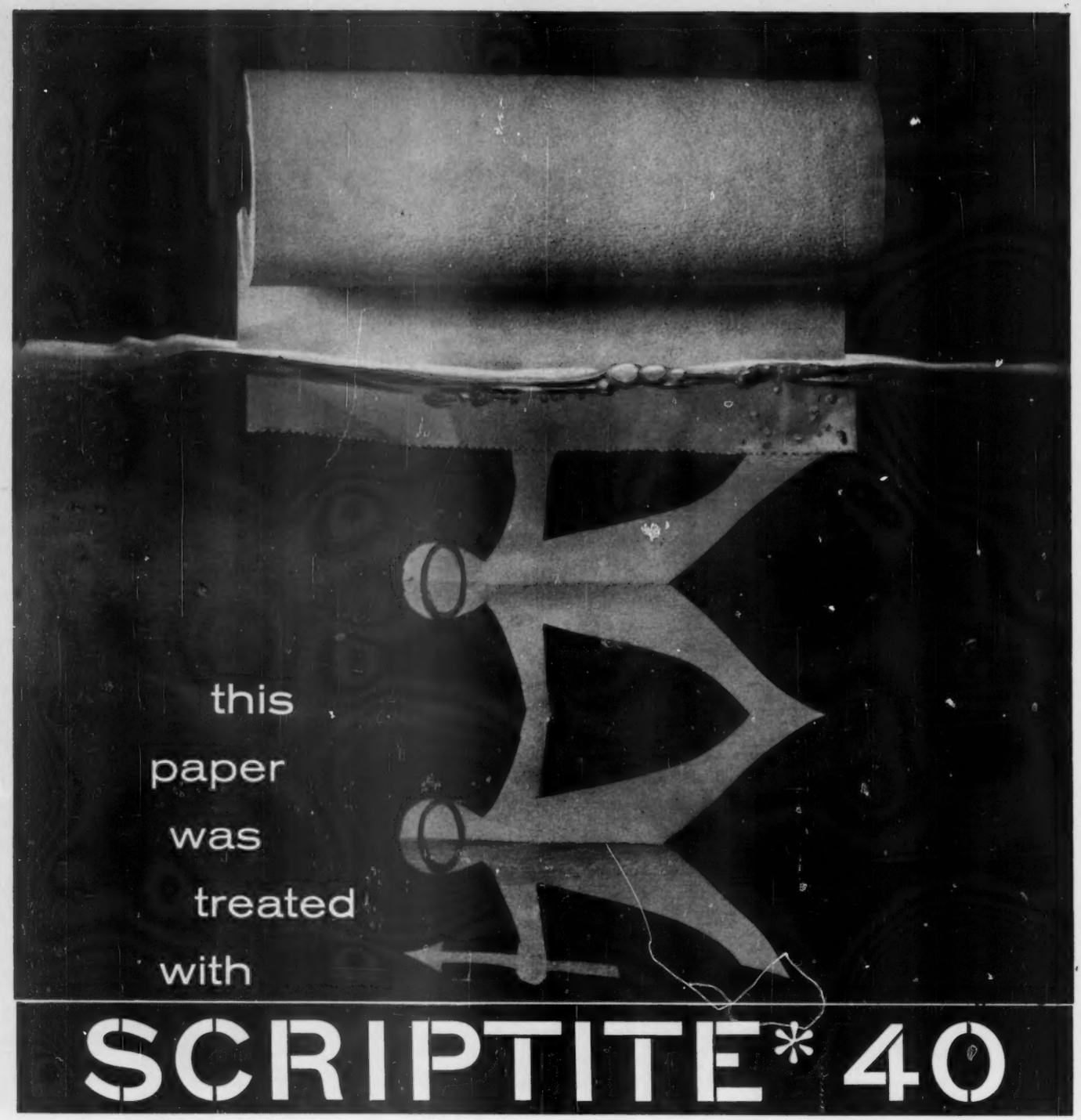

SCRIPTITE* 40

Scriptite 40, a new concept in urea-formaldehyde paper resins, imparts high off-machine wet strength with less resin add-on. Made more cationic, this water-soluble resin is strongly attracted to the cellulose, assuring greater application efficiency. Formulated for fast cure, Scriptite 40 also improves dry tensile strength, dry mullen, wet rub resistance, dimensional stability, and folding endurance. For samples and technical data, write: Monsanto Chemical Company, Plastics Division, Room1114, Springfield 2, Mass.

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*SCRIPTITE, LYTRON: Reg. U.S. Pat. Off.

The Monsanto line of paper resins also includes

SCRIPTITE 54 *outstanding water resistance, both wet and dry rub resistance.* **SCRIPTITE 55** *a low viscosity resin for improved water resistance, wet and dry rub resistance with easy handling.* **SCRIPTITE 52** *in combination with formaldehyde, gives water resistance to folding boxboard and jute liner.* **SCRIPTITE 50** *unsurpassed printability, improved surface characteristics on boxboard.* **SCRIPTITE 33** *melamine wet-strength resin.* **SCRIPTITE 45** *new thermosetting resin for stabilization of paper.* **LYTRON*** *water dispersal resin polymers for coatings.*

PULP & PAPER

Strictly Personal

Pacific

Advancements at Crown Z's Central Research dept., Camas: HERMAN AMBERG, in charge of Columbia River sphaerotilus control research, to plastics research mgr.; JAMES CORMACK becomes industrial fermentations research project leader; DON BURNET, wood products research project leader; THOMAS WILSON to chief of the new analytical laboratory. . . . LEE KELSON, sulfite mill shift foreman, becomes technical asst. to the paper mill supt., tissue, at CZ Camas. . . . JIM HICKEY, attorney at CZ headquarters, transfers to San Leandro as asst. res. mgr. of the Western-Waxide plant. . . .

NOVAL MAGNUSSON, lignin products dept. supervisor at Puget Sound Pulp & Timber Co., and wife Joan attended the International Jaycee World Congress in Rio de Janeiro in November. . . . BILL MULCOY becomes director of research and development of American Forest Products Corp., Newark, Calif. . . . EARL R. BULLOCK, until recently mgr. of Potlatch Forest Inc.'s Paper Cup div. at Elizabeth, N.J., returns to PFI headquarters at Lewiston, Ida. (where he was previously public relations director) to head up insurance for the firm's 14 plants. . . . During a recent two-week West Coast trip JOHN DRAPER JR., president of Draper Felt Co., had opportunity to sample Pacific Northwest living for first time, visiting mills with WALTER A. SALMONSON, Western representative for Draper, and FRED H. IHLENBURG, West Coast tech. representative. . . .

LEWIS M. LUDLOW is new manager of the Pacific district for Wyandotte Chemicals Corp., Michigan Alkali Div., replacing J. M. NORCOTT who resigned. Mr. Ludlow is a graduate chemist of V.M.I. and Miami U. of Ohio, joined Wyandotte's organic sales dept. in 1950. . . .

GEORGE LAMB, president of Lamb-Grays Harbor Co., Inc., Hoquiam, manufacturers of pulp and paper mill finishing room equipment, was elected to a two-year term as chairman of advisors to the institute of technology, at Washington State U. . . .

DR. FRANCIS WHIPPLE, wood products and agricultural papers research leader at Crown Z's Central Research dept., Camas, Wash., has been named new product development mgr. for Canadian Western Lumber Co. . . . HOWARD ADLER, production services supervisor, has been promoted to divisional technical supervisor at CZ's Western-Waxide div., San Leandro, Calif. . . . PETE F. BARNETT, former asst. master mechanic at CZ's Port Angeles div., becomes gen. project engineer at the big Camas mill. . . . EDWIN D. FRAZER, division industrial engineer at CZ Antioch, has been transferred to a similar position at Camas. . . . HOWARD BAUMGARTEN, who formerly directed long-range planning for the Gardner div. of Diamond Gardner Corp., Middletown, O., has joined CZ's long-range planning dept. as corporate economist. . . . ED LOWNIK, sulfite mill shift foreman at CZ's Camas div., has been transferred to Lebanon, Ore., as Orzan supt. and asst. sulfite supt. . . .

Cairns Morand Gibb Doan Hartsock

Predicts Paper Production to Double

JOHN HARTSOCK, International Paper Co., San Jose, Calif., chairman, Golden Gate District, TAPPI, thanks DONALD L. GIBB, former sales manager, plastic sales, Dow Chemical Co., and now consultant to the department, for his talk to the northern California group of TAPPI at the first meeting this season. Mr. Gibb stressed the development of plastic coatings and he predicted that in the next 25 years paper production would double. Other Dow officials in the picture: C. W. CAIRNS, coatings section, plastic sales, and M. H. P. MORAND, sales manager, coatings sales, both of Midland, Mich., and L. A. DOAN, manager, western division, Dow Chemical Co., San Francisco.

BRIAN LEE HOLCOMB, 17 yr. old son of ROBERT HOLCOMB, pulp mill supt. of Fibreboard Paper Products, Port Angeles, Wash., died Oct. 31 of automobile injuries sustained Oct. 26; a brother, JOHN, 14, seriously injured in the accident is recovering.

Joining Sandwell & Co. Ltd. headquarters at Vancouver, B. C.: DR. MORRIS WEYMAN, formerly director of research

Baker ..... Larson

Weyerhaeuser Co. Changes; Five New Vice Presidents

Changes in Weyerhaeuser Co.'s top structure including appointment of five new divisional vice presidents is announced by President F. K. WEYERHAEUSER. These were RAYMOND E. BAKER and L. K. LARSON (both in the pulp and paperboard division and EDWIN F. HEACOX, H. L. SIMMONS and JON R. TITCOMB.

Corporate vice presidents now head three products groups, each with their own divisional vice presidents. Corporate vice pres. GEORGE WEYERHAEUSER heads the renamed lumber, plywood and timberland group. Vice presidents are Mr. Titcomb, manufacturing; ROBERT S. DOUGLAS, marketing; and Mr. Heacox, timberland div. Corpoarte vice pres. JOHN ABRAM heads the research, new products and Silvatek group. ROBERT D. PAULEY is mgr., Silvatek div., W. H. MEADOWCROFT, mgr., new products div., and A. S. GREGORY, director, research div. Operations of the pulp, paperboard and container group under Corporate vice pres. HOWARD W. MORGAN, have been reorganized into four divisions:

Vice pres.-mgr. DEPEK G. CURRIE directs the pulp and paperboard div. In this division are vice pres.-mfg. Mr. Baker, Tacoma, Wash., and vice pres.-sales Mr. Larson, New York.

In the shipping container division, H. M. KIECKEFER is senior vice pres., Camden, N. J. E. K. RADKE, Chicago, is vice pres., Central Region and div. coordinator. Mr. Simmons, Chicago, will be vice pres.-sales, Central Region. Also in the division are R. H. KIECKHEFER, Prescott, Ariz., Western Region vice pres. and C. H. CARPENTER, Camden, N. J. Eastern Region vice pres. A milk carton division is headed by vice pres.-mgr. D. C. WILL, Camden, N. J. Vice pres.-mgr., boxboard and folding carton div., is T. E. MORRISS, Chicago.

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RIDGID®
Drop Head Threader Set

Snap a die head in the ratchet ring . . . cut your thread! It's as simple as that with a RIDGID drop head threader. Heads can't fall out . . . dies reverse quickly for close-to-wall threading. Finest quality RIDGID long wearing dies. Conduit dies available.

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Hand Carrier Free With All Sets Except No. 12-R
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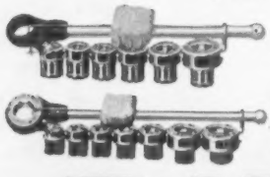


Exposed Ratchet Type
For pipe: ⅛" to 1"—00-R; ⅛" to 1¼"—111-R; ⅛" to 2"—12-R
For bolts: ¼" to 1"—00-RB

Enclosed Ratchet Type
For pipe: ⅛" to 1"—0-R; ⅛" to 1¼"—11-R

RIDGID®
The Ridge Tool Company, Elyria, Ohio, U.S.A.

for Columbia Cellulose Ltd., as research director, and WILLIAM A. BAIN, previously cellulose mgr. for Alaska Pine & Lumber Co. Ltd. . . . JOHN T. WIEGAND has been named mgr. of the Los Angeles sales office of the General Chemical div. of Allied Chemical. He was formerly mgr. at Birmingham, Ala. . . . JOSEPH M. SCHMIED is appointed senior design engineer, packaging group, Fibreboard Paper Products Corp.—L. H. BLACKERBY.

Paul Scallan, President, Spaulding Pulp & Paper Co.

His election by directors of the Newberg, Ore., market sulfite (unbleached) pulp mill, means he will move soon with Mrs. Scallan to Portland, Ore., some 23 miles from the mill. Mr. Scallan continues as vice president and director of Perkins-Goodwin Co. He has been with P-G for 26 years, in charge of the Chicago office. P-G has long been associated in the management of the Newberg mill. Mr. Scallan was born in Cincinnati, graduated from Univ. of Cincinnati and served in army engineers in World War I, finally as a 1st lieutenant. He started in the industry in Riverside Paper Corp., Appleton, Wis., in 1919. He was general supt. at Riverside for 10 years, then was a consultant for Crown Zellerbach interests and a predecessor of Rayonier Inc. in the Far West for years. He continued to live in Appleton, while "commuting" to New York, San Francisco and Seattle. J. C. COMPTON was elected chairman of Spaulding; SIDNEY M. COLLIER, vice pres. and treasurer, and PAUL JAMES, asst. treasurer.

Butler Wymore

20-Year Service Award at CZ

R. A. BUTLER (left), resident manager, Crown Zellerbach Corp., Camas (Wash.) division, receives his 20-yr. service award presented by H. H. WYMORE, manager direct converted papers, San Francisco Headquarters office.

Represents Lindsay in West

GEORGE P. WENNES JR. is new West Coast sales representative for Lindsay Wire Weaving Co. He joined the firm in 1946 in the Laboratory and Research depts. and later was named asst. production mgr. Mr. Wennes will make his headquarters at Oswego, Ore., near Portland.

Ericsson Promoted in Puget Sound Changes

Puget Sound Pulp & Timber Co., Bellingham, Wash., has announced management changes: ERIC ERICSSON, formerly gen. supt., becomes mill mgr. J. ALLAN EVANS formerly asst. sec., has been elected secy., and GEORGE K. BONEY has been named asst. treas. to fill a vacancy created by the death of HARRY A. BINZER, former secy. and asst. treas. RUSSELL DE LOPEZ becomes mgr. of foreign pulp sales. ROY ANDERSON has been named mgr. of domestic pulp sales. They were both assistants of the late RALPH ROBERG.

Ralph Roberg Dies

RALPH M. ROBERG, 73, died Oct. 14 after a heart attack at his Bellingham, Wash., home, less than two months after retiring as vice president of Puget Sound Pulp & Timber Co. A civil engineer, he moved from New York to Pacific Northwest during World War I to organize a shipyard which built 16 freighting vessels. After the war he affiliated with the late OSSIAN ANDERSON, northwest industrialist, and sold pulp and lumber in the Orient. Mr. Roberg joined Puget Pulp in 1929, subsequently became vice president in charge of sales for both that organization and Ketchikan Pulp Co.

Umberto M. Dickey, a Founder Of Soundview, Dies in Seattle

UMBERTO M. DICKEY, 83, retired senior vice president of Scott Paper Co. and one of the founders of the Soundview Pulp Co., died of a heart attack at his home in Seattle, Wash., Oct. 25. In 1934 he and others organized the Soundview Pulp Co. with a large sulfite pulp mill at Everett, Wash. All Soundview properties including important timber and logging operations became a division of the Scott Paper Co. in 1951, and Mr. Dickey became the top Scott executive on the west coast.

Northeast

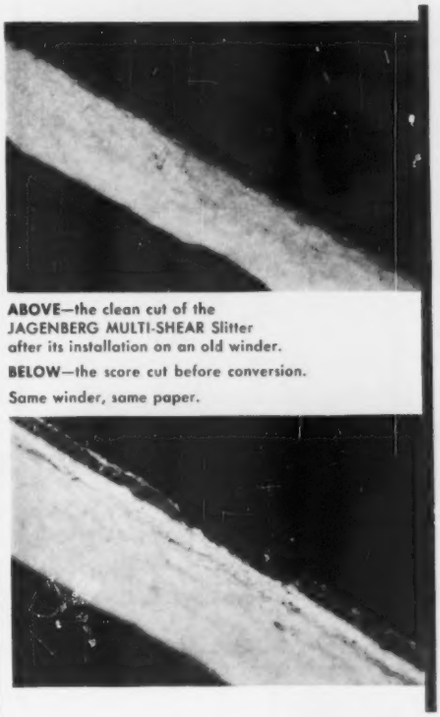
MARSHAL A. METZGER succeeds RICHARD F. CADWALLADER, who has resigned as controller, Oxford Paper Co. DWIGHT A. RUMERY steps up as manager of engineering procurement and RICHARD M. WALDENMYER as asst. mgr. for engineering procurement. RALPH E. WOODSUM becomes purchasing agent, Rumford, Maine and ELLIOTT K. HALE has been promoted to asst. purchasing agent. LINCOLN B. FISKE moves up as supervisor, plant protection, succeeding CARLTON A. DENNIS, who has retired.

EMRE BLEIER has been named sales rep for the industrial division of Nopco Chemical Co. He replaces WILLIAM J. GAVIN who has been made regional mgr., and will cover Mr. Gavin's area of metropolitan New York, New Jersey, Philadelphia, Wilmington, Del., and parts of Pennsylvania.

LEONARD J. WOOD has been promoted to product manager, Paper Division at National Starch and Chemical Corp. He is a b.s. (chemistry) graduate of Abilene Christian College, Abilene, Texas, has been with National since 1946, starting as a chemist. He was transferred to New England sales in 1953 and made supervisor of paper technical service in 1955 and in 1957, paper development and service manager.

EDWARD W. KEITH, vice president and manager of mills, HENRY S. HOOPER,

A CLEAN CUT



ABOVE—the clean cut of the JAGENBERG MULTI-SHEAR Slitter after its installation on an old winder.

BELOW—the score cut before conversion.

Same winder, same paper.

is a SHEAR CUT. Make that clean cut decision by converting your old winder from score cut to shear cut. Do away with those ragged and fuzzy edges and turn out rolls with clean smooth sides.

THE JAGENBERG MULTI-SHEAR CUT will accomplish this at considerably less expense than you expect and will give you an extra bonus: knife setting ease unmatched by other shear slitters.

The MULTI-SHEAR slitter shaft replaces the platen and equips your winder with a bottom slitter at every half inch. Pneumatic or hand operated top slitters are provided.

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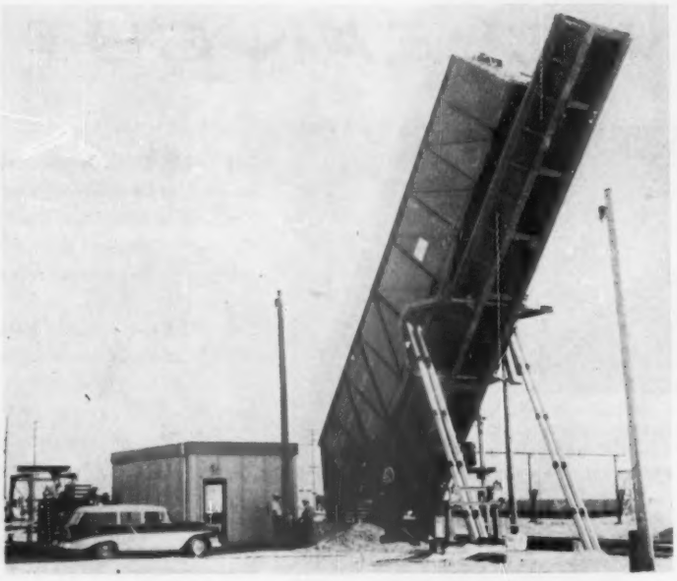
Strictly Personal

technical director and ORA B. STEVANS, yard supt., have retired from Penobscot Chemical Fibre Co. . . . WILLIAM J. ODELL has joined Crocker, Burbank Papers Inc., as product development mgr. Move marks Crocker's expanded activities in polyethylene coated papers. Mr. Odell was previously general mgr. of the plastics division of Ludlow Papers Inc., recently attended the International Plastics Exposition in Düsseldorf and addressed the southern area of the Institute of Packaging in London.

C. M. "CHICK" FLAIG is now paper machine supervisor at New York and Penn's Lock Haven, Pa. mill, with responsibility for production of Nos. 2, 4, and 5 paper machines and the supercalenders and H. D. FLORUS is paper machine supervisor for Nos. 1, 3, 7 and 8 machines. CHARLES CRUSE is administrative asst. directing accounting activities of Lock Haven and Castanea mills. TOM G. WILLIAMS, general supt., also takes over direct charge of Lock Haven mill soda mill and de-inking dept., under LAWRENCE PARKER, the technical control lab under MERRILL BOONE, stream improvement lab under C. H. EDWARDS and the quality control dept., under H. C. MCLAUGHLIN. THOMAS F. MYERS steps up as Castanea mill maintenance general foreman succeeding the late WILLIAM E. KLINE. ALBERT P. BOWER becomes electrical technician at the Castanea mill.



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Air-O-Flex Equipment Company's hydraulic dumper mounted on a 100-ton scale receives wood chips purchased on weight basis.

Low horsepower elevates end-opening railcar or highway trailer to 60° angle in 3 minutes with single operator.

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Peter L. MacDougall, Pulp Sales Stora Kopparberg Corp.

Mr. MacDougall will be responsible for Stora's market pulp sales in North America and will include in addition to Stora's Swedish brands, Nova Scotia Pulp Limited's 350 ton/day bleached soda-base sulfite pulp mill now under construction at Stora, Nova Scotia, near Hawkesbury.

His appointment was announced by KARL A. CLAUSON, president. Mr. MacDougall, a graduate of Bishop's College School, Lennoxville, Que., was formerly manager of pulp sales for Howard Smith Paper Mills Ltd. During the war he saw service with the Royal Rifles of Canada which included nearly four years in a Japanese prison camp.

Erskine C. Ingram Mgr. of Weyerhaeuser Mill at Delair

ERSKINE C. INGRAM has been appointed manager of Weyerhaeuser Company's paperboard mill at Delair, N.J., it is announced by H. W. MORGAN, vice president. Ingram has been asst. supt. of the company's Everett sulfite mill. He now replaces STUART B. CLARK, who retires as manager and vice president of the former Kieckhefer-Eddy division.

In another Weyerhaeuser appointment BERTHOLD M. FISCHER is named general traffic manager of the company's paperboard converting operations, with headquarters in Chicago.

FROM GENERAL ELECTRIC'S PROJECT '8000' . . .

*Polyseal** Insulated Motors for Use in Pulp and Paper Operations

GENERAL ELECTRIC NOW OFFERS a complete line of open dripproof a-c motors specifically designed to withstand the corrosive atmospheres of pulp and paper applications!

TWO NEW FEATURES—G-E's Polyseal insulation system and added mechanical protection—equip these motors for many operations which formerly required more fully-protected enclosures!

HIGH MECHANICAL STRENGTH—A one-piece, cast-iron frame and corrosion-resistant external parts provide the extra strength and durability required to meet the demands of pulp and paper operations.

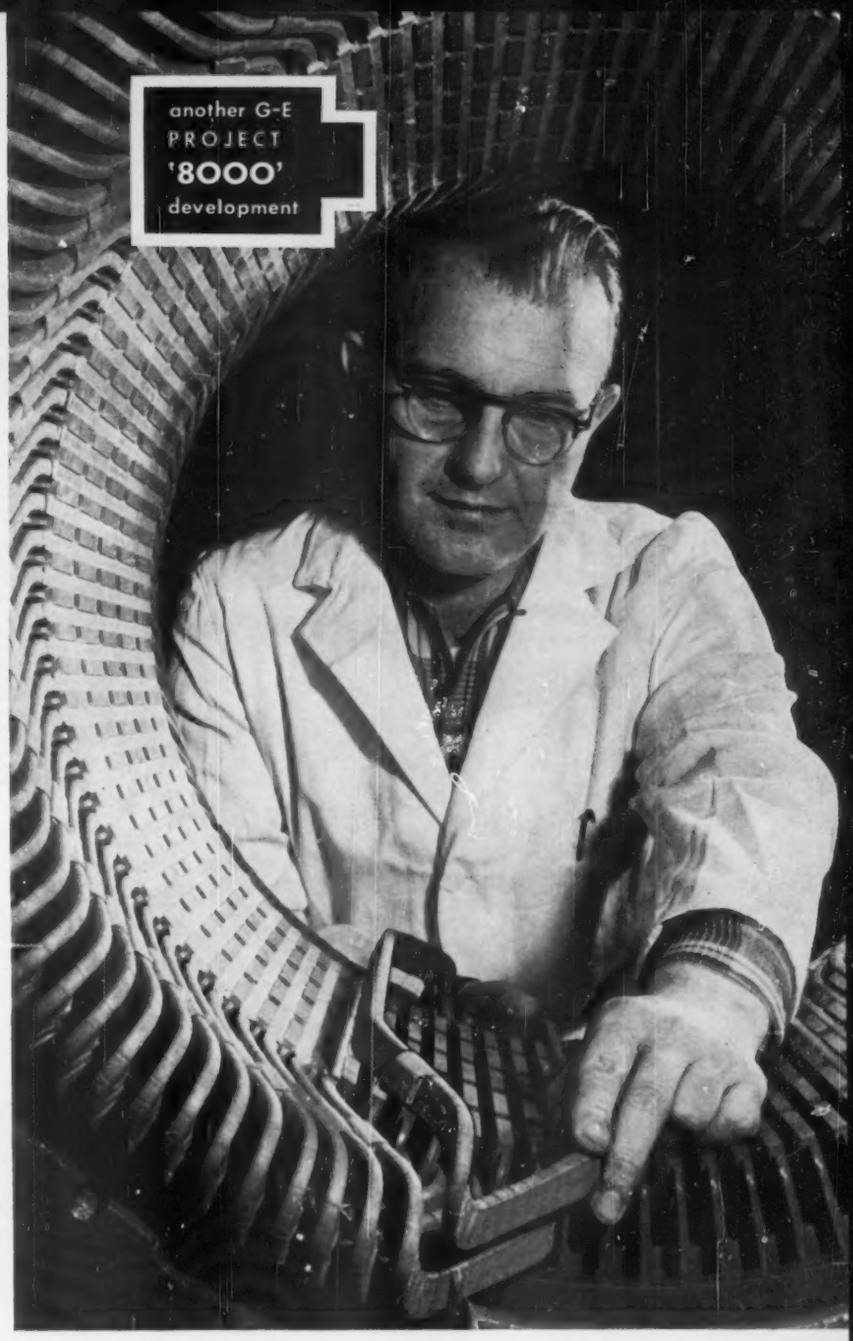
NEW POLYSEAL INSULATION SYSTEM—G-E's new Polyseal supported silicone rubber insulation system is completely vulcanized and sealed to resist the contaminating effects of bleaching and black liquor! In addition, these coils undergo rigid factory tests—including G-E's exclusive underwater hi-pot test—to assure positive seals against moisture and other contaminants.

ADDITIONAL PROTECTIVE FEATURES—Gasketed conduit boxes and water-resistant bearing seals also help General Electric motors withstand such extremes as accidental flooding!

FOR MORE DETAILS on G-E Polyseal-insulated Motors, call your nearby G.E. Apparatus Sales Office, or write for bulletin GEA-6889, Section 884-7, General Electric Co., Schenectady, N. Y.

*Trademark of General Electric Co.

GENERAL ELECTRIC



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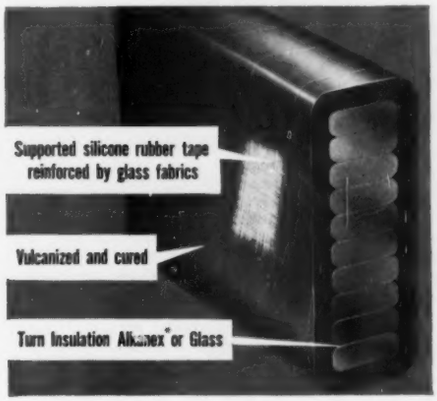
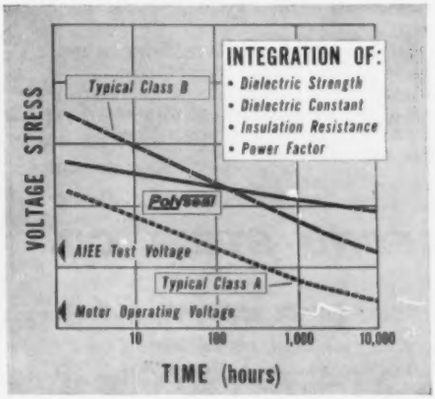


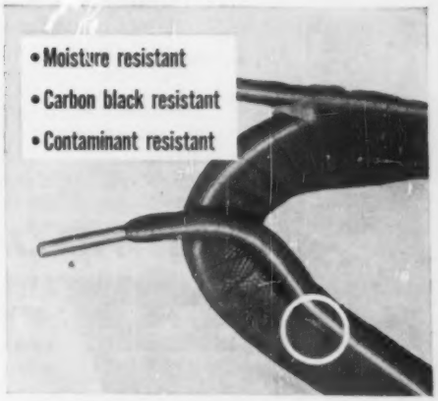
Using specially developed G-E supported silicone rubber tape, Polyseal is the first silicone rubber insulation system on the market that is fully supported against mechanical breakdown.

LONG LIFE



Tested over long periods of time with voltage applied, General Electric Polyseal insulation systems retain a much higher dielectric strength than other commonly-used insulations.

COMPLETELY SEALED



Positive lead seal is provided by a special silicone rubber compound which vulcanizes the lead tubing to the silicone rubber wall of the coil. This seals the coil against contaminants.

FACTS You Should Know . . .

about the DIFFERENCE in Stainless Steel Tubing ——

Both photographs above show the microstructure of the weld and base metal of Type 304 stainless steel tubes. Photograph A reveals accelerated corrosion of the weld metal due to the presence of delta-ferrite. This tube was manufactured by welding, swaging and annealing, which is an insufficient amount of cold work to produce a high quality, uniformly corrosion-resistant welded tube.

Photograph B shows a typical tube supplied by Wallingford Steel. This tube was produced by the welding and cold drawing process, then inspected with a Magne Gauge to insure no ferrite was present in the weld metal. *Processed and inspected in this manner, Wallingford Cold Drawn Tube is guaranteed to show no preferential attack in weld area.*

All Wallingford welded stainless steel tubing is cold drawn and inspected by Magne Gauge. *Can your suppliers say this about the stainless steel tubing they produce?* Wallingford's manufacturing techniques and quality control checks assure top quality — *yet cost you no more.* Why not purchase *your* tubing where *tonnage is produced on a laboratory basis?*

Write for additional information to: Dept. PP, The Wallingford Steel Co., Wallingford, Connecticut.

THE WALLINGFORD STEEL CO.

Progress in Metals for over 37 Years

WALLINGFORD, CONN., U.S.A.

COLD ROLLED STRIP: Super Metals, Stainless, Alloy
WELDED TUBES AND PIPE: Super Metals, Stainless, Alloy

CLEM GENDRON, Fitchburg Paper Co., transfers to the Decotone division to head up maintenance; BOB MORIN moves up to mechanical supt., LLOYD LUTHER to asst. mechanical supt., and WILFRED COUTURE to mechanical foreman.

ARTHUR R. TILLEY is now controller of Eastern Fine Paper and Pulp Div., of Standard Packaging Corp. . . . ANTHONY ANDROSKI heads up West Virginia Pulp and Paper Co.'s. building boards division's commercial activities in Tyrone, Pa. . . . ALEXANDER B. WALKER steps up as asst. treasurer of Brown Co.—Maurice R. Castagne

Cann Bernstein

Join Pulp & Paper Group at Charles T. Main Inc.

EVERETT D. CANN was previously in research for Hudson Pulp & Paper Corp., Palatka, Fla., and had formerly served as supt. of technical Services for St. Lawrence Corp. Ltd., Three Rivers, Que. He holds a master of science degree from the Univ. of New Hampshire and a phd from McGill. . . . RALPH H. BERNSTEIN, formerly plant engineer for New Haven Board & Carton Co. and a consulting architect and engineer for Westcott & Mapes Inc., is a graduate of Yale Univ. and did graduate work at the Univ. of Buffalo and Brooklyn Polytechnic Institute.

R. F. (Dick) Kist, Service Manager Pulp Sales

LOUIS CALDER, JR., president of Perkins-Goodwin Co., international pulp and paper marketing management organization, announces the appointment of Mr. Kist to the newly created position. He joined the Perkins-Goodwin organization Dec. 6, 1932. He was appointed traffic manager June 30, 1947, and will continue to hold that position in addition to his new duties which include responsibility for order processing and expediting, statistical control, and collection and dissemination of information affecting pulp sales.

BLANCOPHOR®

can make your white papers as bright as this sheet

Blancophor HS and ES optical brighteners in your white papers create a remarkably blue-white, fluorescent finish that adds visibly to the sales appeal of your sheet. The Blancophor brighteners, in liquid or powder form, can be added either *as is* to the pulp, or in solution to the surface. Newly-developed Blancophor ES brands are particularly recommended for beater use at low pH (below 5.0 at the wire), because they are more stable. Use of Solar® tinting colors in the brightened pulp will provide a range of hues extending from greenish-blue to reddish-violet, thus making available a variety of brilliant white tints.

NOTE: This sheet has been whitened with Blancophor ES-73.

Ask for samples and complete technical information at any Antara office.

gaf gdc ANTARA

from Research to Reality

GENERAL DYESTUFF COMPANY • ANTARA CHEMICALS

SALES DIVISIONS OF GENERAL ANILINE & FILM CORPORATION

435 HUDSON STREET • NEW YORK 14, N. Y.

SALES OFFICES: New York • Providence • Philadelphia • Charlotte • Chattanooga • Chicago
Portland, Ore. • San Francisco • Los Angeles. IN CANADA: Chemical Developments of Canada, Ltd., Montreal

Blancophor brighteners and Solar Colors, manufactured by General Aniline & Film Corporation, are sold outside the United States under the trade name of "Tintofen" by distributors all over the world.

Strictly Personal

Carl Magnus Returns From 18 Months in Orient

Carl Magnus, former manager and superintendent of paper mills in Wisconsin and the Miami Valley of Ohio, is returning to his home, Nincar Lodge, Johnson, Vermont, to pick up the threads again of his consulting business. Mr. Magnus and his wife spent 18 months in Taiwan, Korea, Hongkong and Japan. In Korea most of this time, he was supervising engineer for restoration of the paper industry, assigned to the United Nations Korean Reconstruction Agency.

The Magnuses accumulated many souvenirs and plan an "Oriental Room" at Nincar Lodge—"a pleasant chore during our long cold Vermont winter," he writes. At the peak of Typhoon Vera, which killed 5,000 Japanese and injured many thousands more, the Magnuses were buffeting high winds in the Hakone Mt.-Lake area facing Fujiyama.

MUNICIPAL and INDUSTRIAL WATER SUPPLIES

by the

RANNEY® METHOD

An abundance of naturally filtered river water is supplied to the new pulp and paper mill of Cascade Kraft Corporation by means of a Ranney Horizontal Water Collector.
Where geologic conditions are suitable, Ranney Collectors offer the advantages:

1. Dependable supply
2. Excellent Quality
3. Low initial cost
4. No maintenance

A few of the cities in the West utilizing Ranney Collectors are: Boise, Idaho; Kennewick and Yakima, Washington; Nyssa and St. Helens, Oregon; Sacramento, California.

For information on how a Ranney Collector may solve your water problems, please write or call:

RANNEY METHOD WESTERN CORP.
2015 J Street • Sacramento 14, California
In Canada: RANNEY METHOD (B.C.) LIMITED, Vancouver, B.C.

Midwest

DONALD G. PRYOR, formerly with Watervliet Paper Co., becomes a process engineer on the technical staff of the Biron (Wis.) div., Consolidated Water Power & Paper Co. In other Consolidated WP&P appointments, PERRY E. HAWKINS, formerly with Curtiss Candy Co., becomes sales representative at the Ahdawagam div., and DONALD E. WALKER has joined the engineering dept. as mechanical engineer. He was formerly with R. R. Donnelly & Sons Co.

RICHARD V. ALLEN has been named controller of Thilmany Pulp & Paper Co., a new position in the firm. At the same time, W. W. OWENS, formerly office mgr. and presently chief accountant, was elected Thilmany asst. secretary. . . . A. C. MCCORRY of St. Regis Paper Co., Tacoma, Wash., and president of PIMA, was honored at the November 5 meeting of PIMA's Michigan div. at Kalamazoo. Principal speaker was THOMAS GARDNER of Marathon, a div. of American Can Co., Menasha, Wis., whose subject was New Developments in Drying.

Following the resignation of E. W. SMITH as president and director of Sutherland Paper Co., Kalamazoo, Mich., S. A. ANGOTTI and J. T. KIRKPATRICK, both vice presidents, were named managing directors. They will serve until a successor to Mr. Smith is named and will report to a special committee of directors composed of L. M. CROCKETT and W. J. LAWRENCE JR. . . . GLEN D. BRIGHT has been named a sales engineer, Chicago office, Fuller Co.

The 1958 Food Additives Amendment to the Pure Food & Drug Act was the subject of a talk given recently by SAMUEL ALFEND at a meeting of Ohio TAPPI in Middletown, Ohio. Mr. Alfend is chief of the Cincinnati district of the F&DA. More than 120 TAPPI members and guests heard the program arranged by GINO BIASI of National Diamond Corp.

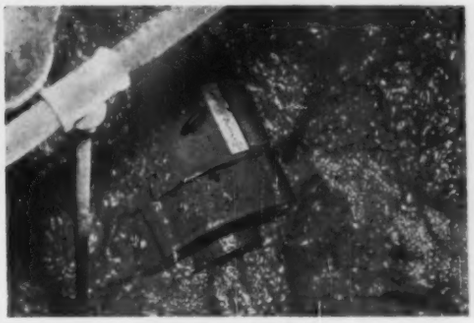
Vaculite Corp., recently moved from Cambridge, Mass., to Hamilton, Ohio, has announced three personnel changes. (Vaculite is owned jointly by National Research Corp. and Champion Paper & Fibre Co.) ALLAN R. DRAGONE, in addition to remaining as a Vaculite vice pres., becomes product mgr. for metallized products in Champion's printing papers sales div. JOSEPH G. MORRIS JR., formerly asst. to Champion's president, has been named gen mgr. of Vaculite. He succeeds CHARLES G. ELLINGTON JR., who has transferred to Champion's paper products group as director of planning.

. . . N. RODERIC DOVER has joined the headquarters staff of Wisconsin Wire Works in Appleton, Wis. He is responsible for technical liaison between the firm and paper mills throughout the United States. . . . GEORGE H. WOODLAND, vice pres. for marketing, has been elected to the

PICKLED in a 4% brine solution!

CHOKED
in a tornado of abrasive dust!

FROZEN
for weeks at 75° C below zero!



BURIED ALIVE
in thick, sluggish mud!

nothing . . . but nothing stops Super-Seal open-type motors

Thanks to exclusive Poxeal and Silco-Flex insulations, Super-Seal motors have shown endurances that even enclosed motors couldn't match. Results and reasons available from your A-C representative or distributor. Or write General Products Division, Milwaukee 1, Wisconsin

Poxeal, Silco-Flex and Super-Seal are Allis-Chalmers trademarks.

ALLIS-CHALMERS A-1151

Strictly Personal

board of directors of Chain Belt Co., Milwaukee.

Warren Pumps Inc. has recently appointed two Midwestern industrial sales representatives: Stolley & Orlebeke, 605 West Washington Blvd., Chicago (DEarborn 2-1737) and Carlson-Rutledge Co., 4500 Euclid Ave., Cleveland (HEnderson 1-7722). . . . LLOYD W. HALE, asst. controller of the Mead Corp., has been transferred to Dayton, O. from Chillicothe.—Don W. Zeigler.

Promotions for Many In K-C Training Program

Three hundred men have graduated from the formal Junior Trades training program of Kimberly-Clark Corp. since the inception of the program in 1940 (curtailed in war years). Today 11 Kimberly-Clark mills have the Junior Trades program and between 85 and 100 men are participating each year. Many of the junior trades' graduates have moved up into supervisory positions.

McVicker Becker

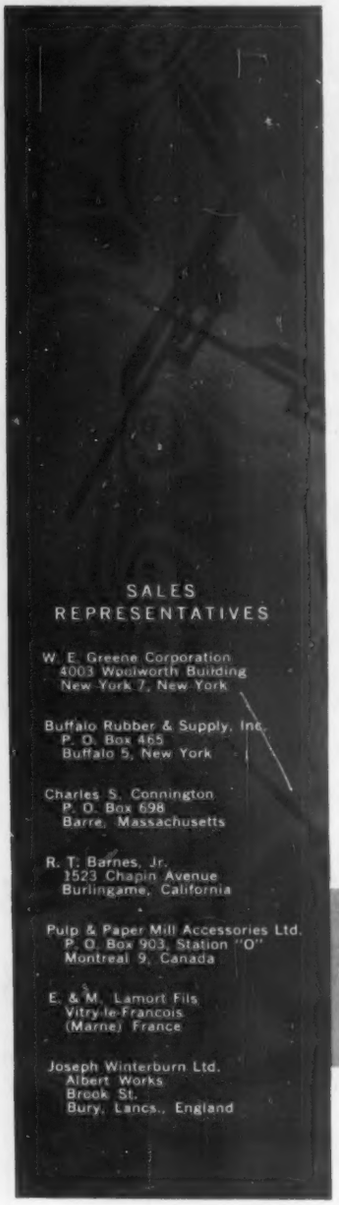
Chillicothe Purchasing Procedure

J W. (BILL) MCVICKER, recently promoted to assistant to the president (H. A. SEIDENSTICKER), Chillicothe Paper Co., Mead subsidiary, is showing purchasing records to E. C. BECKER, who succeeded him as purchasing agent. Mr. Becker had been purchasing agent of the neighboring Mead Chillicothe Division. Mr. McVicker, a 23-year veteran, will continue in charge of the traffic dept., a post he previously held, and will supervise the sales office, scheduling dept. and traffic dept. He previously was traffic mgr. as well as p.a. He and his wife, the former MARIAN HAMMOND, have three children. He was a lieut. commander in the navy in World War II. He joined Mead in 1955.

F. Schelhorn T. M. Cox, Jr.

New Departments to Coordinate Business Planning, and Research

HUGH C. LAUGHLIN, executive vice president of Owens-Illinois Glass Co. and president of its Forest Products Group, announces Dr. Schelhorn, vice president and mgr. of mfg. and research for the Mill Division, assumes the new title of vice president-applied research and development of the Forest Products Group, and Mr. Cox, manager of administrative services for O-I's Administrative Division, becomes vice president-business planning and analysis of the Forest Products Group. This group consists of the Mill, Paper Products, and Multiwall Bag Division and National Container of California. Dr. Schelhorn has held his previous position since 1957. He had been mill coordinator and a plant manager and has been active in this industry since 1943. He holds a ph.d. from the Institute of Paper Chemistry. Mr. Cox joined O-I in 1953 and held his previous position since 1956.



There's more to a Lodding Doctor than meets the eye

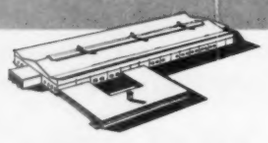
Few qualifications for manufacturing count more than experience. And when experience has been concentrated within a specialized line of endeavor it adds value to the product.

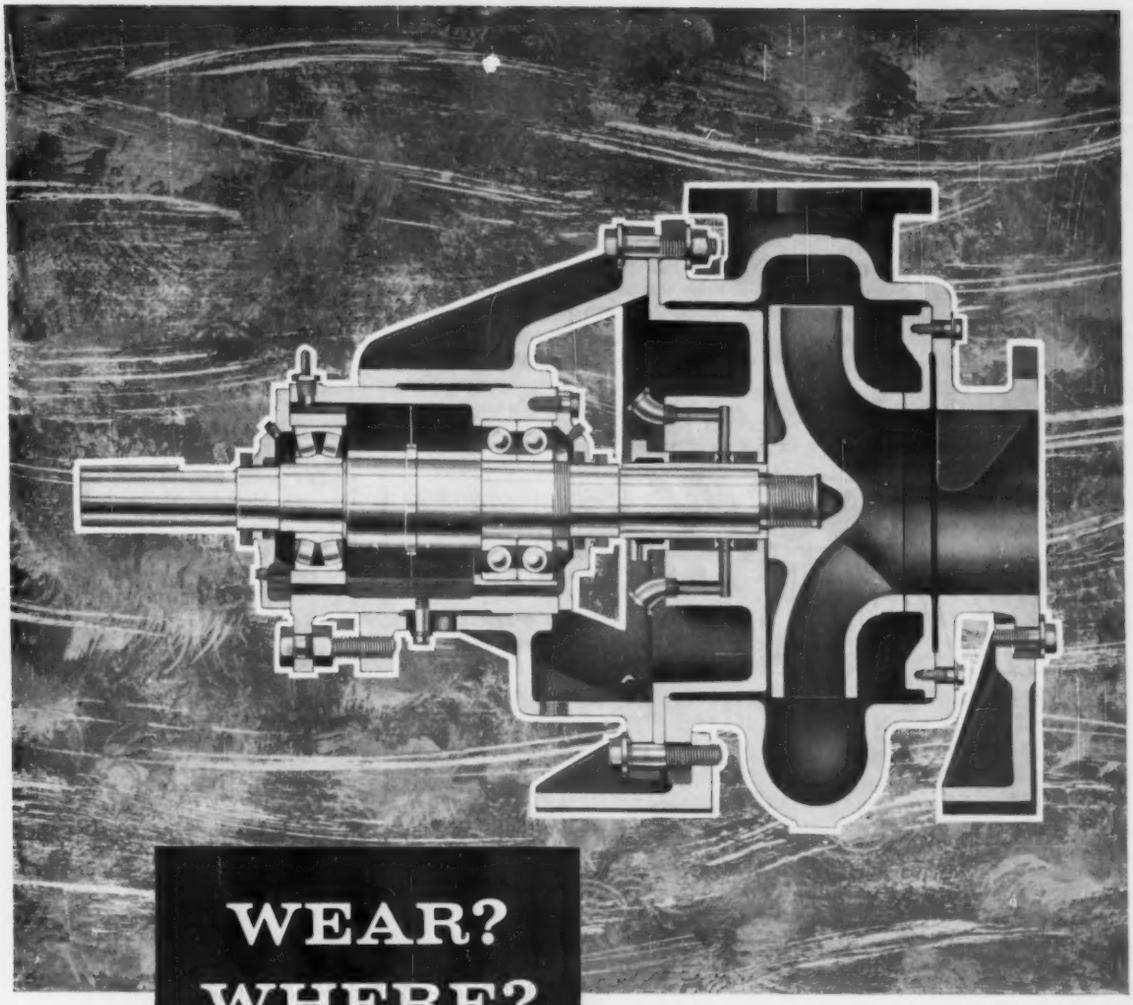
Lodding Doctors carry that extra value derived from experience — experience accumulated over thirty years of specialization in the manufacture of doctors, doctor blades, blade holders and their accessories. During this period, Lodding has built and installed doctors for every conceivable doctoring application, under all conditions and of every type and size, up to and including the Great Lakes Paper Company's 340 inch newsprint machine.

Installations of Lodding Doctors are found in nearly every paper mill in this country and in many mills abroad. Each was precision engineered and precision manufactured for the specific roll being doctored.

Doesn't it make sense to rely on specialized experience? Most mills have found that it does. Next time, get Lodding Doctors. Then you'll profit too.

LODDING
Engineering Corporation
AUBURN, MASSACHUSETTS





There's only one major moving part that can wear in Allis-Chalmers paper stock pumps

Wear hardly has a chance against these heavy-duty pumps. Known in the mills for maximum endurance, Allis-Chalmers PW pumps minimize the risk of crippling shutdowns.

Here's the advantage of simplified design. Parts replacement is never a problem. Disassembly can be made in minutes by swinging out the rotating element, without disturbing suction or discharge piping. Maintenance is readily achieved.

In addition, these pumps offer substantial savings through parts standardization. Three bearing brackets fit 11 pump sizes, and only four other parts vary in size from one pump to another.

For further information on a complete line of durable pumps for the paper industry, call your local A-C office, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS A-C ALLIS-CHALMERS

A-1203-PP

PULP & PAPER

Strictly Personal

Marvin Jones Fatally Injured In Highway Accident in Ohio

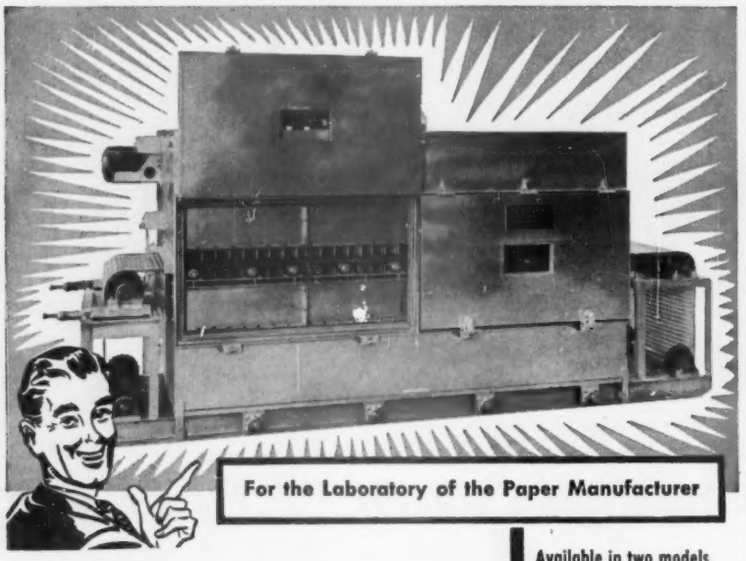
MARVIN JONES, representative of Lockport Felt Co. in several Middle West states, died recently of injuries received in a highway traffic accident near Dayton, O. He lingered on several weeks after the tragic event but succumbed after two operations for head injuries. A panel truck had crowded his car into a safety island.

For many years, Mr. Jones was director of purchases for Michigan Carton Co., Battle Creek, Mich. He resigned this position to become the first resident manager of the new pulp and paperboard mill built by Weyerhaeuser Co. at Springfield, Ore., in the late 1940's. Later he returned to Battle Creek and joined Lockport Felt Co.

He is survived by his widow, Martha, and three children. A son works with a plywood firm in Eugene, Ore., a daughter is married and living in Portland, Ore., and another daughter is home.

NEW

JET ZONE® LABORATORY and Pilot Plant HIGH VELOCITY DRYER



For the Laboratory of the Paper Manufacturer

- widens the scope of your pilot operation.
- makes initial runs to test market.
- allows wide range of paper formation and finish.
- opens up new avenues for product development.
- extremely adaptable as a dry and cure unit.
- permits exploration of the new coating techniques.

Write for complete specifications

Available in two models to handle 24" web. GAS OR STEAM FIRED!

Model L 4
- Two four-foot long drying zones.

Model L 8
- Two eight-foot long drying zones.

JOIN THE INDUSTRY...INVESTIGATE THE NEW TECHNIQUE OF HIGH VELOCITY DRYING

"TAKING THE MYSTERY OUT OF DRYING"
WOLVERINE EQUIPMENT COMPANY
31 MAIN ST., CAMBRIDGE 42, MASS.

A Leader in High Velocity Drying Since 1946

Dodd

Edwards

Dodd Named Mgr., O-I Paper Products Div.

EDWIN D. DODD has been elected vice pres. of Owens-Illinois Glass Co. and gen. mgr. of the Paper Products div. He succeeds LESTER R. EDWARDS, who becomes vice pres.-marketing of the O-I forest product group, which includes the Paper Products, Mill and Multiwall Bag divs. and National Container Corp. of California. Mr. Dodd has been division vice pres. and asst. gen. mgr. of paper products for more than a year. He joined O-I in 1946 and was a production mgr. of the Libbey Glass division. Mr. Edwards in 1935 founded Northeastern Container Corp. in Bradford, Pa. The firm became a subsidiary of National Container Corp. in 1956 and later that year merged with O-I.

Olewine Joins Nepco

JOHN OLEWINE, recently supt. of the Luke, Md. mill of West Virginia Pulp & Paper Co., has joined Nekooska-Edwards Paper Co. as manufacturing project engineer. He has been assigned duties at both the Nekooska and Port Edwards, Wis. mills, reporting to the respective mill mgrs.

Hornbostel Returns to Beloit

LLOYD HORNBOSTEL's health has improved to the point that he has been able to resume his active business life with Beloit Iron Works, Beloit, Wis. He will serve as technical asst. to the president, HARRY MOORE.

RYKON *Grease*

passed this test at Corn Products Company

Situation: The springs in the grease chargers on expeller machines at Corn Products Company's Argo, Illinois, plant are under extra heavy tension. Due to this tension, oil formerly separated from the grease thickener in the grease cups. Bearings did not receive proper lubrication and the cups filled with grease thickener residue. The system needed cleaning every three months. Each time, large amounts of residue were found. Ten special-purpose greases were tried in an effort to solve the problem.

What was done: A Standard Oil lubrication specialist working with Corn Products' plant maintenance people recommended RYKON Grease #2 E.P. The system now needs cleaning only every six to nine months. Very little residue is found. Now RYKON Grease has become one of the important lubricating greases in use at Corn Products' Argo plant.

RYKON Grease is formulated with a unique non-soap organic thickener. The fibers of this thickener hold RYKON's fine quality base oil firmly in suspension The grease resists water washing, high temperature and dirt contamination while providing superior lubrication to bearings of all types.

What you can do: Get more facts about RYKON Grease from the Standard Oil office nearest you anywhere in the 15 Midwest and Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 S. Michigan Ave., Chicago 80, Ill.**

You expect more from **STANDARD** *and you get it!*

Standard's Arnold Parus and chief lubrication foreman Henry Anderson take a look at expeller unit's grease system. Arnold Parus is well equipped through experience and training to work with plant men on lubrication problems. Arnold has a B.S. degree from Bradley University and three years' field experience in this kind of work. He has also completed Standard's Sales Engineering School.

Quick facts about **RYKON** *Grease*

- Heat stable. At sustained high temperatures, RYKON Grease remains soft and grease-like.
- Resistant to water washing.
- Mechanically stable. Minimum change in consistency in service.
- Resistant to oxidation. Thickener acts as inhibitor.
- Exceptional rust preventive properties.

PULP & PAPER

Strictly Personal

Southern

JIM HALL, gen. supt. at Champion Paper & Fibre Co., Canton, N.C., has been named to a four-man gen. production services staff at company headquarters, Hamilton, O. . . . Also at Canton, CARL WELTE and WILLIS KIRKPATRICK have been named asst. div. mgrs. JAMES WILKINSON replaces Mr. Welte as production mgr. Mr. Kirkpatrick is former asst. to the div. mgr. W. J. BULL, asst. production mgr., is new process controls dept. mgr., and his old job will be taken by HAROLD MORRIS, onetime asst. prod. chief at Champion's Pasadena, Tex., mill. . . .

Crown Zellerbach Corp. promotions at its Gaylord Container div.: LEM CLEMENTS, asst. pulp mill supt., is new pulp mill supt.; ART REED is his asst., and DALTON POLLET, tech. asst., has been named asst. supt., sulfate machines. CARLEY SMITH, asst. pulp mill supt., is now paper machine supt. . . . ED ELLIS, mgr. of International Paper Co.'s Natchez, Miss. mill, is becoming firmly entrenched as chief hobgoblin of Natchez. He was gen. chairman and chief spook at the recent Hallowe'en party given for hundreds of Natchez mill employes' children. Ed heads the party every year.—W. F. DIEHL.

McElroy Hudson

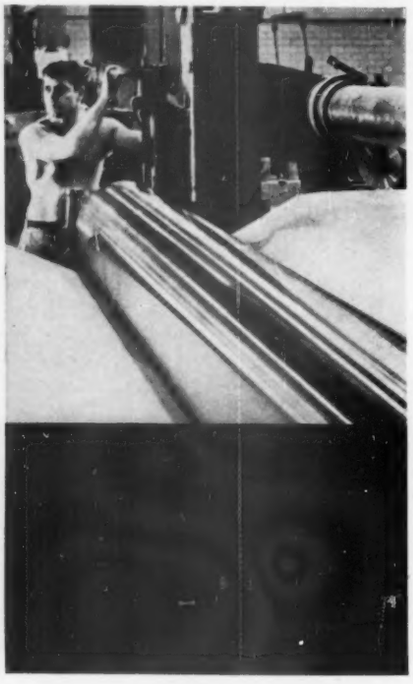
Owners of South Supply Firm

Pelican Supply Co., Inc., Shreveport, La., has been purchased by THOMAS A. MCELROY and MORLEY A. HUDSON, Shreveport businessmen. Mr. McElroy will be president and general manager while Mr. Hudson will serve in an advisory capacity and continue to operate Hudson-Rush Co., manufacturer's representative of industrial equipment and controls. Pelican has main office, warehouse and shops in Shreveport, a branch and warehouse in Lake Charles, and supply store in New Iberia. The oldest locally owned supply firm in the Shreveport area (1908), it is distributor for U. S. Rubber, Link-Belt, Simonds Saw, Walworth Valves, National Tube, American Chain and Cable, and others. Its machine shop, welding plant, forging and heat treating shop and metal inspection dept. are available.

Riegel Realigns Carolina Div.; Dailey in New Post

J. D. DAILEY, formerly mgr. of production, has been named to the new post of mill mgr. at the Carolina div. of Riegel Paper Corp., Acme, N. C. A Riegel veteran, he was with the firm prior to the 1951 start-up of the Acme mill.

In other Carolina div. changes, C. C. PETERS, formerly asst. mgr. of production, becomes production mgr.; DR. J. D. WETHERN, formerly technical director, succeeds DR. A. L. M. BIXLER, mgr. of manufacturing services, who has resigned. O. A. MARROW, pulp mill supt., moves up as asst. production mgr.; A. W. STAFFORD JR., asst. pulp mill supt., is pulp mill supt.; PAUL R. KINSEY, a supervisor of technical services, technical director; A. A. MCCALLUM, pulp foreman, asst. mill supt., and A. B. GREGORY, maintenance supervisor, takes on additional responsibility for electrical and instrument maintenance.



your program for continued business growth and profits deserves the services of experienced specialists

J. E. SIRRINE COMPANY

ENGINEERS SINCE 1902 GREENVILLE, SOUTH CAROLINA

A DEPARTMENTALIZED ENGINEERING ORGANIZATION SERVING • BUSINESS • COMMERCE • INDUSTRY

USCOWELD PLASTIC PIPE FITTINGS

Greater Joint Strength—Faster Insertion—Thanks to

THE ONLY SOLVENT-WELD FITTING WITH AN INTERFERENCE FIT!

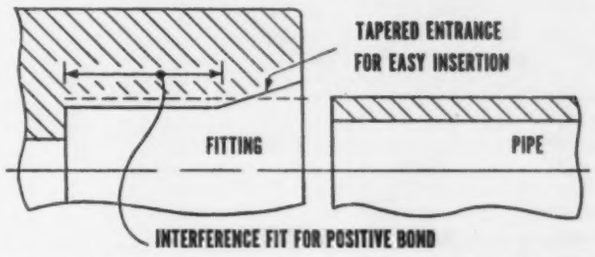
To get maximum joint strength, interference fit is a must! UscoWeld fittings are designed to provide at least a .005 inch *interference fit*. And UscoWeld fittings are a cinch to install because of a specially designed *tapered entrance socket*. U.S. Rubber has developed the unique UscoWeld fitting of the same tough, lightweight, corrosion-resistant thermoplastic as famous Uscolite® CP plastic pipe.

All UscoWeld fittings can safely handle the pressures recommended for the corresponding size of extra-heavy Uscolite pipe. Maximum recommended operating temperature is 170°F. Pipe can be cut to exact length, is easily installed in close quarters.

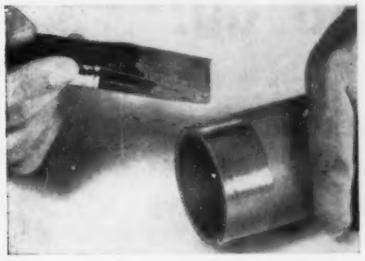
UscoWeld*—plus the most complete line of plastic pipe and fittings in America—is obtainable through your local "U.S." Distributor, any "U.S." Branch, or write us at Rockefeller Center, New York 20, N. Y. In Canada: Dominion Rubber Co., Ltd.

*Patent applied for

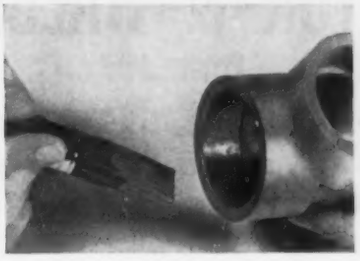
THE USCOWELD PRINCIPLE



By combining tapered entrance socket and a .005 inch interference fit—even when the pipe is at the small limit of the diameter tolerance and the fitting at the large limit of its diameter tolerance—UscoWeld is easily installed, and the strongest solvent-weld joint available.



Apply Uscolite CP cement to the outside area of the pipe that is to be in contact with the socket.



Next apply cement uniformly to entire inside area of *tapered entrance* socket.

While both cemented surfaces are still wet, insert pipe in fitting and push until pipe bottoms against shoulder in the fitting.

ADVANTAGES

- fast, easy to assemble—tapered entrance provides easy insertion of pipe
- strong joint—interference fit provides for optimum fusion of pipe and fitting into homogeneous mass; joint strength not dependent on cement alone
- automatic alignment of pipe and fittings
- chemical resistance of the UscoWeld joint is the same as for Uscolite pipe
- UscoWeld takes maximum advantage of the inherent "solvent-weldability" of plastic pipe and fittings
- no threading required—just cut pipe square
- not necessary to allow for thread make-up variation—pipe can be cut to exact lengths
- easy to install in close quarters
- resists fatigue due to vibration or thermal stresses by elimination of stress concentration at thread roots.

Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

Pulpwood

ESTEL BROWN, timber appraiser for Crown Zellerbach Corp. at Portland, Ore., has moved to Port Angeles as mgr. of Puget Sound wood supply. He succeeds K. C. OSIER, who has taken early retirement. . . . F. R. HAYWARD, chief forester for Anglo-Newfoundland Development Co. Ltd., recently traveled across Canada to participate in Victoria, B.C. christening ceremonies for the new Canadian naval cruiser *Terra Nova*. Mr. Hayward presented a plaque to the crew on behalf of the town of Terra Nova, Nfld.

DAVE JAMES, in charge of public relations for Simpson Logging Co., Shelton, Wash., since 1947, becomes public relations director for Simpson Timber Co., Seattle. Succeeding him at Shelton is OSCAR LEVIN, managing forester at Simpson's Olympic tree farm. W. S. LOONEY is named to Mr. Levin's former post. . . . ROBERT W. HARRIS has been transferred from the Washington, D.C. office of the U.S. Forest Service to the Pacific Northwest Forest & Range Experiment Station. He is in charge of the division of station management.

A $2,500 Northwest Paper Foundation fellowship for 1959 has been awarded DAVID V. SWENSON, 1949 graduate of the Univ. of Minnesota School of Forestry. The award was announced by T. SCHANTZ-HANSEN, director of the school's Cloquet forest research center, and by A. R. BOQUIST, director-treas. of the Foundation, also at Cloquet. Mr. Swenson will do research in the continuous forest inventory system. He worked with the U.S. Forest Service and several private firms in mapping and surveying.

C. E. "JIM RIDGEWAY has retired as wood procurement and insurance mgr. for Scott Paper Co.'s West Coast div., Everett, Wash., following almost 50 years' close association with Pacific Northwest logging. Mr. Ridgeway helped pioneer the use of various western wood species for pulp. He is credited with having been responsible for procuring more than 5 billion ft. of timber. . . . ANDREW J. BAKER, since 1958 in the div. of forest utilization research at the Pacific Northwest Forest & Range Experiment Station (USFS), Portland, Ore., has been transferred to the Forest Products Laboratory, Madison, Wis., to work in the chemical utilization of wood.

Rawls Named to Florida Post

MARCUS G. RAWLS, mgr. of wood procurement and land acquisition for St. Regis Paper Co. mills in Florida, has been elected 1959-1960 president of the Florida Board of Forestry. He was previously board vice pres. and sec. (Board members are appointed by the governor to four-year terms to determine policies of the state forest service.)

Richard Graser, Sales Promotion Supervisor, McCulloch Corp.

Mr. Graser will assist in the creation and direction of promotional materials, incentive programs and merchandising campaigns, and work closely with distributors and dealers on McCulloch's nationwide sales promotion efforts from Los Angeles headquarters, announces ROBERT K. ORSER, adv. mgr.

SWINERTON & WALBERG CO.

Founded 1888

BUILDERS OF PULP AND PAPER MILLS AND CONVERTING PLANTS, WE PERFORM GENERAL CONSTRUCTION, COMPLETE EQUIPMENT ERECTION AND PROCESS PIPING . . . . . WITH OUR OWN FORCES

Recent Projects:

Cascade Kraft Corporation	Kraft Pulp and Paper Mill	Wallula, Washington
Continental Can Company (Robt. Gair Paper Products Group)	Stock Preparation Expansion	Los Angeles, California
Container Corporation of America	Boxboard Mill	Santa Clara, California
Fibreboard Products Inc.	Kraft Pulp and Paper Mill	East Antioch, California
Fibreboard Products Inc.	Converting Plant	Denver, Colorado
International Paper Company	Bag Plant Equipment	Los Angeles, California
Johns Manville Products Corp.	No. 2 Machine Additions	Pittsburg, California
Kimberly-Clark Corporation	Creped Wadding Mill	Fullerton, California
Potlatch Forests, Inc.	No. 4 Paper Machine	Pomona, California

MAIN OFFICE

200 BUSH STREET, SAN FRANCISCO 4

Branch Offices: — LOS ANGELES — OAKLAND — SEATTLE — DENVER — SALT LAKE

New 'KING-SIZE' Loom has a watchful eye

This giant new 650" loom at Oriskany keeps a sharp eye on the felts it weaves. The slightest flaw in shuttle operation is automatically detected, and electrically-controlled brakes stop the loom so the operator can make adjustments. That's just one more reason why you can depend on the perfect uniformity of Oriskany Felts from end to end.

To keep pace with our rapidly-increasing production volume, we have added another 60" Woolen Card that helps us meet our customers' exacting requirements. At Oriskany, modern equipment is only part of the picture. We are continually developing technical treatments for felts that help you make better paper products . . . at less cost.

First choice—because They last **Oriskany**

WATERBURY FELTS

H. WATERBURY and SONS COMPANY • ORISKANY, NEW YORK

Howard W. Peterson, Asst. Logging Manager for Crown Zellerbach

He was supt. of CZ's Clatsop Tree Farm in Oregon. Now will assist logging mgr. C. E. NICHOLS in directing logging operations four divisions in Washington and Oregon.

Canada

Members of new advisory panel of the Pulp & Paper Research Institute of Canada: DR. WILFRED GALLAY, research director, E. B. Eddy Co.; L. R. THIESMEYER, president of the Institute; F. A. HARRISON, vice pres., and woodlands mgr., Canadian International Paper Co.; J. H. FISHER, director of research, MacMillan & Bloedel Ltd., E. L. HOWIE, chief forest engineer, Fraser Co. Ltd.; DR. A. C. HILL, exec. vice pres., Anglo Paper Products Ltd.; A. J. PHILIP, vice pres. and gen. mgr., Canada Paper Co. Board chairman of the Institute is F. L. ALLEN, exec. vice pres., Canadian International Paper. . . . E. A. COTE, asst. deputy minister, Dept. of Northern Affairs & Resources (Ottawa), and J. D. B. HARRISON, director of the Dept. forestry branch, have been designated as the government's board members of the Institute. . . .

Personnel appointments announced recently by Anglo-Newfoundland Development Co. Ltd.: J. S. GOODYEAR, vice pres., finance; B. W. POTTS, former woods mgr., now consultant; T. M. HOPKINS, former controller, is secretary; C. R. TITTEMORE, asst. gen. mgr. and W. J. JOHNSTON, ex-asst. woods mgr., now mgr. of division. . . . ORVAL C. COOK has been named vice pres., pulp and paper sales, Crown Zellerbach Canada Ltd., Vancouver, succeeding FRANK A. SCOTT, who moves to San Francisco as asst. vice pres., newsprint and printing paper sales. . . .

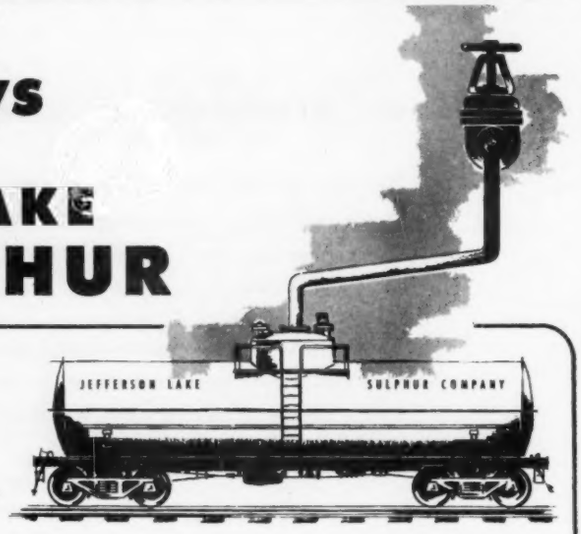
KARL HOLT, former process control engineer, becomes technical control director for Westminster Paper Co. Ltd., New Westminster, B.C.; C. NEWTON HAGAR, former technical director, now asst. plant mgr. at the eastern operations, Crabtree Mills, Que. . . . GEORGE T. DONOHUE is now chairman of the board, Donohue Bros. Ltd., Quebec City. He was succeeded as president by MARK DONOHUE, previously exec. vice pres. A. EMIL BEAUVAIS is vice pres. and managing director. He was formerly vice pres. and sec. W. H. EGAN, who was res. mgr. at the Clermont mill, is vice pres. in charge of manufacturing, and PERCY AUGER, former chief auditor, is now secretary of the company. . . .

HARRY MACDONALD, mgr., pulp sales, Canadian Forest Products Ltd., Vancouver, B.C., returned recently from a tour of European pulp producing and marketing centers. . . . BLAIR MOORE, formerly of the Cornwall div., Howard Smith Paper Mills Ltd., has been made mgr. of the company's flax division at Morden, Man. He succeeds TOM GARDNER, another ex-Cornwallite, who is continuing with the flax operation as consultant. Mr. Moore entered the industry at Temiskaming with Canadian International Paper Co. . . . JOHN IRWIN has been named Canadian sales representative, Pfaudler Permutit Inc.—C. L. SHAW.

Cecil M. Matheson Dies

CECIL MACKAY MATHESON, 60, a director and also general sales manager, pulp and paperboard, Fraser Companies, Ltd., died suddenly in Montreal Oct. 27. Born at Fredericton, N.B., he joined Fraser at Edmundston, N.B., in 1919.

Save 3 Ways
with
JEFFERSON LAKE
LIQUID SULPHUR



1. **Lowers handling costs in your plant. Eliminates all dusting losses, too.**
2. **No contamination. Increases yield and reduces corrosion.**
3. **New, lower rail freight rates make tank car deliveries competitive with water transportation.**

You can rely on Jefferson Lake's many years of experience with tank car shipments for rapid delivery anywhere. Our fleet of specially designed and insulated tank cars, largest in the industry, stands ready to move your order. Send today for our illustrated brochure describing proper handling procedures for this new low-cost means of transportation.

JEFFERSON LAKE SULPHUR COMPANY

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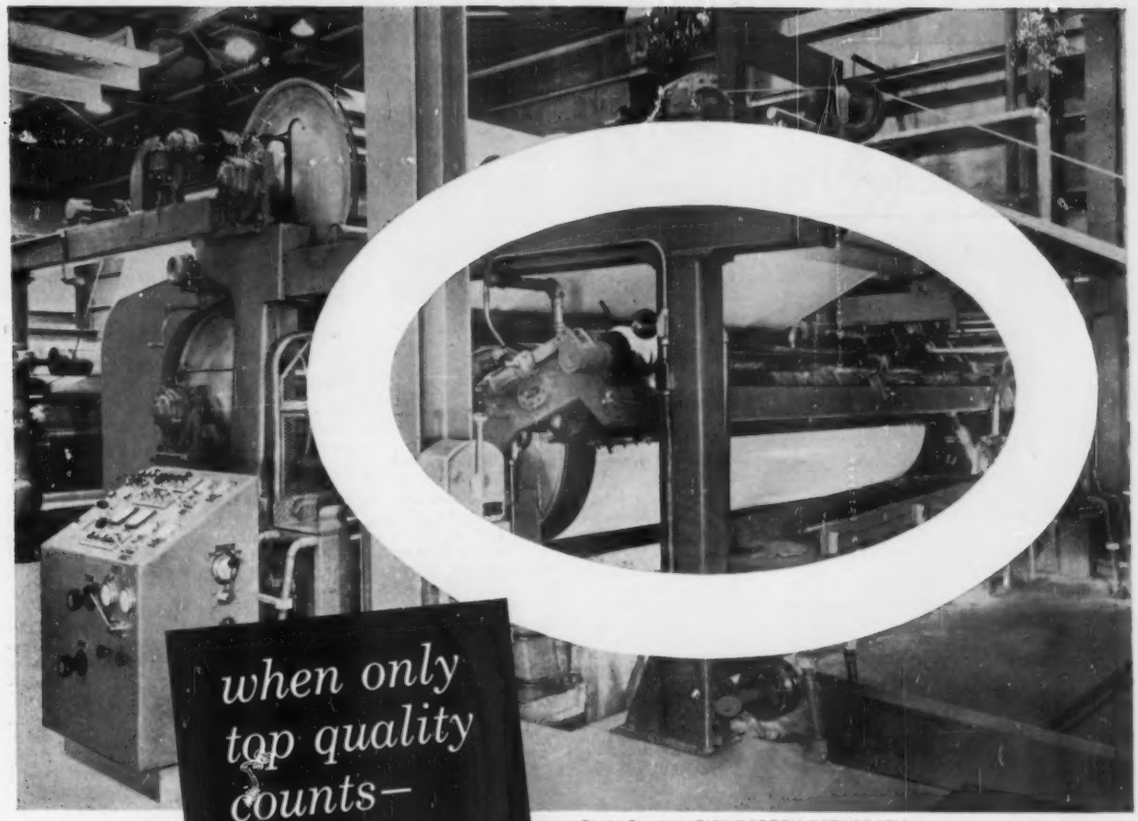


Photo Courtesy RICE BARTON CORPORATION, Worcester 1, Massachusetts

count on

CLINTON CORN STARCHES

for TRAILING BLADE COATING

CLINCO OXIDIZED STARCHES

Today's high-speed coating techniques call for color formulations with high solids and high viscosities. To meet these needs, CLINTON recommends CLINCO Oxidized Starches which offer a marked increase in ink "holdout", greater uniformity of coating on the sheet and better acceptance of the coated surface for printing inks. The next time you make a formulation for use in the trailing blade coater, find out what CLINCO 330-B, CLINCO 314-B, and CLINCO 55 can do for *you!*

TECHNICAL SERVICE
on specific problems is yours on request.
We'd like to be of service. Just write.

CLINTON

CLINTON CORN PROCESSING COMPANY, CLINTON, IOWA

NEWS FROM SUPPLIERS TO THE INDUSTRY

Harlan J. Hauser, Farrel Manager of Field Sales

Farrel-Birmingham Company, Inc., announces Mr. Hauser as successor to D. WHEELER CLARK. Mr. Hauser also is appointed to the company's management committee and transfers to general offices in Ansonia, Conn. He first joined Farrel in Buffalo in 1941. For the past 2½ years he has been assistant sales mgr. of Consolidated Machine Tool Division and sales mgr. of Watson-Stillman Press Division at Farrel's Rochester plant.

Lang

Jowett

Lang, Jowett Named to Important Patton Posts

WILLIAM LANG is sales engineer and GEOFFREY JOWETT, project engineer for Patton Mfg. Co., Springfield, Ohio. Mr. Lang will devote his entire time to sales and customer consultation in the Paper Mill Machinery div., reporting to WAYNE T. CRANNELL, division gen. mgr. Mr. Lang was formerly chief engineer for Nekoosa Foundry & Machine Works, and previously with Thilmany Pulp & Paper Co. and Beloit Iron Works. His father, the late LLOYD "CURLEY" LANG, for many years was pulp mill supt. for Kimberly-Clark Corp. and industry consultant. Mr. Jowett, a Canadian, will also function exclusively in the Paper Mill Machinery div. He was previously with Manchester Machine Co., Dominion Engineering Co. and Black-Clawson Co.

Owens

Smith

Promotions by Combustion Engineering, Inc.

D. S. WALKER, vice president and director of sales for Combustion Engineering, Inc. announces the appointment of VINCENT P. OWENS as asst. general sales manager in charge of industrial products. For the past ten years Mr. Owens has been manager of paper mill equipment sales. He will continue to supervise paper mill division sales in addition to sales of industrial steam generators, Raymond division equipment and fabricated products. Mr. Owens has been continuously active in pulp and paper mill circles since joining Combustion in 1936. He is a mechanical engineering graduate of New York Univ. and is secretary of the Engineering Division of TAPPI.

ED L. SMITH succeeds Mr. Owens as manager of paper mill equipment sales. He is a graduate of the Univ. of Texas (b.s. in chemical engineering) and joined Combustion in 1948 as a student eng.

CASCADE KRAFT CORP. chooses

BABCOCK & WILCOX
power boiler & recovery boiler with venturi evaporator-scrubber

COCHRANE
boiler water conditioning & blow-off systems

DIAMOND
soot blowers & water columns

from

C. C. MOORE & CO., ENGINEERS

Contractors for Steam and Recovery Plant Equipment for Pulp and Paper Industries

STEAM PLANT EQUIPMENT FOR INDUSTRIAL CONCERNS . . .

REPRESENTING . . . Babcock & Wilcox Co. • Detroit Stoker Co. • Cochrane Corporation Diamond Power Specialty Corp. • Spray Engineering Co. • Cooper-Bessemer Corp. The Airetool Mfg. Co. • Custodis Construction Co., Inc. • The Dampney Company of America

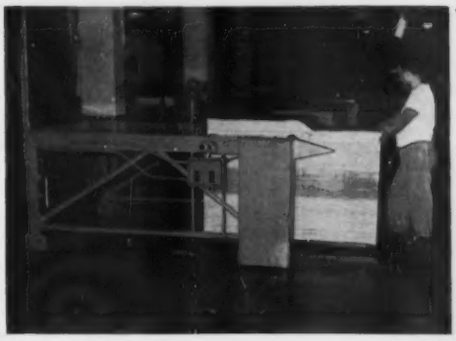
Main Office: 450 Mission Street, San Francisco

Branch Offices: Los Angeles, 1111 Wilshire Blvd. — Seattle, Smith Tower — Phoenix, Luhrs Building — Vancouver, B.C., Standard Bank Building — Portland, Ore., Failing Building

HOW SOUTHWORTH STRADDLE TABLES*

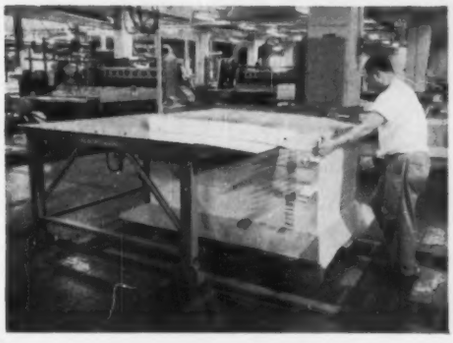
Cut Finishing Room Costs

AT OXFORD

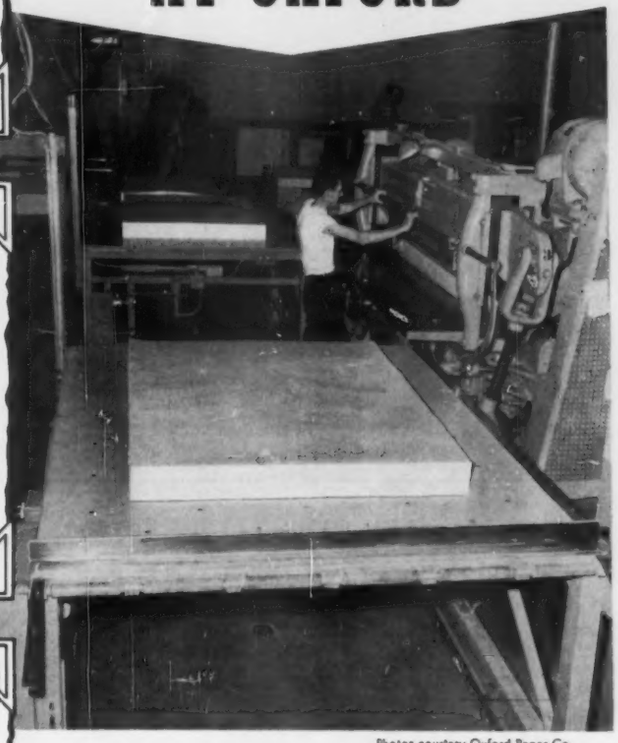


Fixed Height Single Roll Straddle Lay-up Table

Discharging From Trimmer to Straddle Stacker Table



Fixed Height Straddle Stacker Table



Photos courtesy Oxford Paper Co.

TOTAL COST OF INSTALLATION RECOVERED IN LESS THAN ONE YEAR!

Through the simplified and direct flow of stock to and from the trimmer, the fully efficient mechanized layout illustrated here cut production costs by reducing manual handling to a minimum . . . cutting idle time, permitting *full time operation of the trimmer.*

This is another success story of a Southworth installation whose low initial cost is quickly recovered in the combined savings resulting from a more efficient and productive finishing room.

SOUTHWORTH MACHINE CO. since 1890

*Patents Pending

For Details Write or Call Collect:

SOUTHWORTH MACHINE CO.

2812 WARREN AVENUE, PORTLAND, MAINE, SPruce 4-1424

Mfrs. of Paper Conditioners; Automatic Skid Lifts; Lift Tables; Skid Turners; Hand, Foot, Motor Driven Punching Machines; Humidifiers; Envelope Presses; Punch Heads; Tabbing Knives and Corner Cutters plus Custom Built Equipment.

Valley Iron Works Corp. Is New Name for Firm

The Valley Iron Works Co., Appleton, Wis., today became the Valley Iron Works Corp., a wholly-owned subsidiary of Allis-Chalmers Mfg. Co., according to RAY A. PETERSON, president of the corporation. Transfer of assets and business has been approved by directors and stockholders of the former company.

The subsidiary will continue under the present management and manufacture of paper making machinery will continue. Allis-Chalmers manufactures products used in the pulp and paper industry including electric controls, motors, pumps, chip screens, machine drives and log barkers.

Watson

Walsh

W. E. Watson and J. R. Walsh Promoted by Beloit

HARRY C. MOORE, president, Beloit Iron Works and W. S. WOOD, president, Beloit Eastern Corp., have recently promoted two of their key personnel. Mr. Watson has been named vice president and general plant manager, Beloit Iron Works. J. R. Walsh has been named to a similar position at Beloit Eastern Corp. Both have had long experience in manufacturing.

Vice Pres. Frederic A. Soderberg Now Gen. Mgr., Huyck Felt Div.

He was formerly vice pres-marketing, F. C. Huyck & Co. A graduate chemical engineer, Univ. of Maine, Mr. Soderberg was employed by International Paper Co. at Rumford and by General Dyestuff Corp. before coming to F. C. Huyck. He succeeds RODERICK T. CLARKE, reassigned to corporate staff duties. Mr. Soderberg is vice pres., Univ. of Maine Pulp & Paper Foundation, and past chairman, PIMA Industrial Affiliates.

Hooker Chemical Corporate Headquarters In New York

Hooker Chemical Corp., will establish corporate headquarters in New York City in February or March announces THOMAS E. MOFFITT, president.

Hooker has rented the entire 34th floor of a new office building, 666-5th Ave., New York. This will also accommodate the company's New York District sales offices.

Caskey

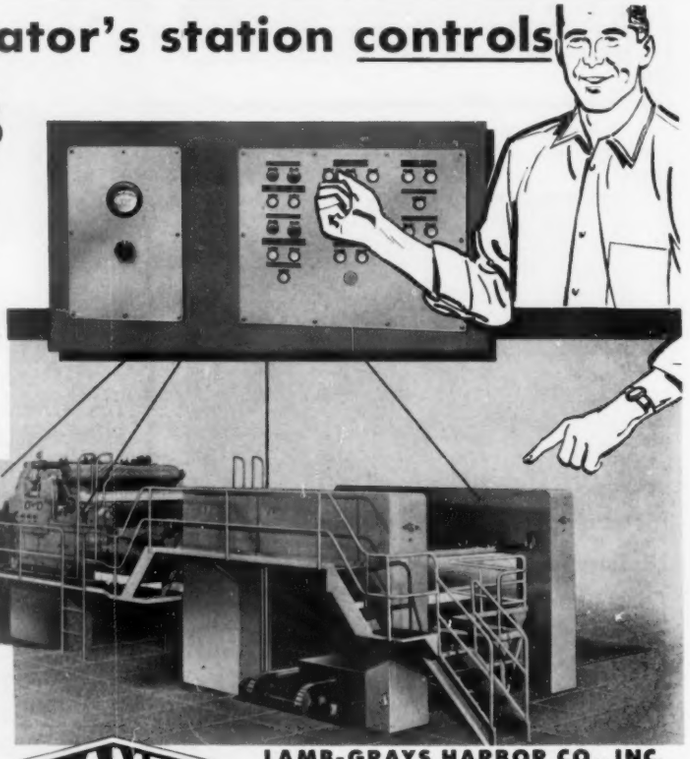
McAndie

Promoted by Morden Machines

FRANK E. CASKEY has been named mgr. of technical sales and services for Morden Machines Co., Portland, Ore. JAMES L. MCCANDIE, formerly development engineer, becomes West Coast sales engineer for the firm.

One Man at operator's station controls

Entire LAMB Precision Sheet Cutter-Layboy



New Time-Saving Design

Cuts more sheets *accurately* at higher speed; reduces downtime to give *more operating time* per shift. Results in higher volume.

Lamb Engineering

Our practical experience can assist you with finishing room problems, help eliminate waste of time, paper and labor.

LAMB

LAMB-GRAYS HARBOR CO., INC.
HOQUIAM, WASHINGTON, U. S. A.
PHONE: GEneral 8-1000

B.C. Forest Service Photo

PROMISE HIGH QUALITY BLEACHED PAPER PULP IN 1961

Early in 1961, a new high quality market pulp mill will go on stream near Castlegar, British Columbia, at the foot of the Arrow Lakes region of the Columbia River. Celgar Limited will utilize almost 900,000 acres of prime northern-type forest lands held under a Tree Farm Licence in perpetuity.

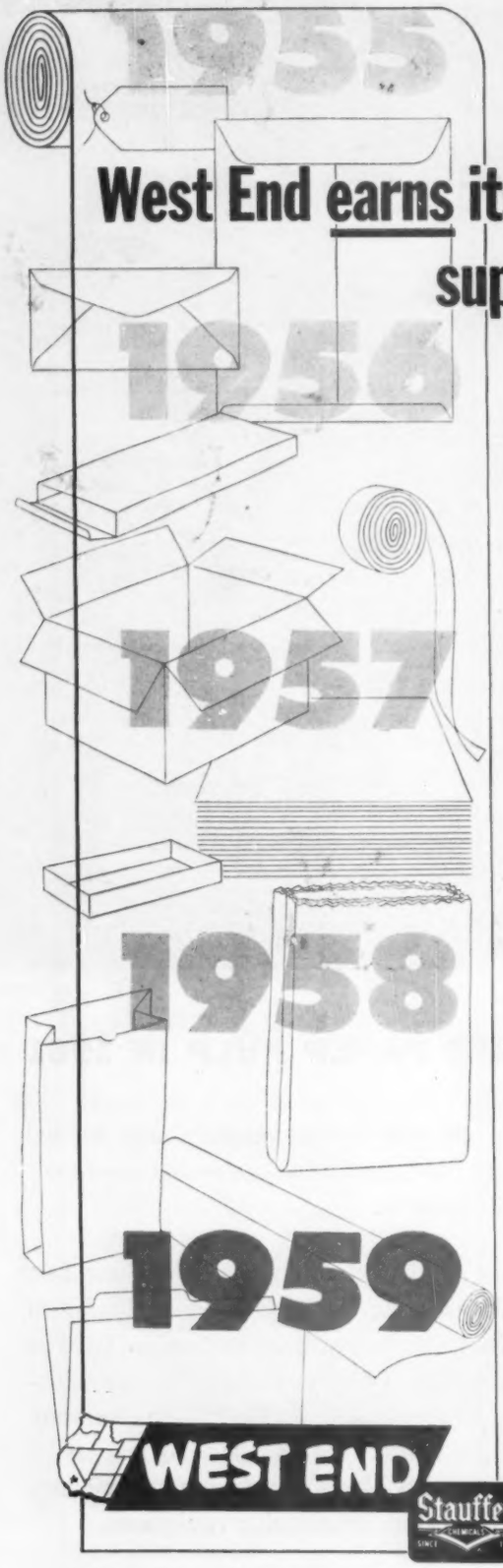
All the resources necessary for efficient mill operation are available — wood to meet any future demand, plentiful water from the clear Columbia, power and gas, transportation from the mill site to markets, and trained people from established industrial communities in the area.

Celgar Kraft will combine many of the best qualities of Northern and Western pulps to produce a product with an exceptional balance of properties. The long, tough fibres from high-density softwoods develop high bursting strengths coupled with outstanding tear resistance over a wide range of freeness, and in a variety of stock preparation equipment.

COLUMBIA PULP SALES LIMITED has been formed to distribute Celgar Kraft pulps and Columbia Cellulose sulphite pulps. Offices are located at:
1030 West Georgia St., Vancouver 5, B.C.
1600 Dorchester St. West, Montreal 25, P.Q.

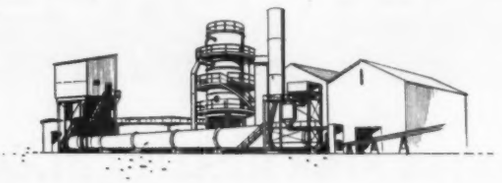
V4247-1

Celgar Kraft



West End earns its position as a responsible supplier of salt cake

In 1955, with its first offering of salt cake, West End assured the Industry of an ability to meet long-term commitments based on vast natural raw material supply, ample production and storage capacity, rapid and efficient transport facilities. By unconditional fulfilment of every commitment for over 4 years, West End has conclusively demonstrated its complete reliability as a major source of highest quality salt cake. Every normal and unanticipated requirement has been met with equal ease and dispatch.



Today, with even larger facilities and a determination to maintain the reputation it has earned, West End is solidly qualified to handle any size requirement in a wide marketing area where it is a logical source of salt cake for kraft paper manufacturers. You are invited to consult with us on the over-all economics of using West End Salt Cake.

Stauffer CHEMICALS SINCE 1885

WEST END CHEMICAL COMPANY
DIVISION OF STAUFFER CHEMICAL COMPANY

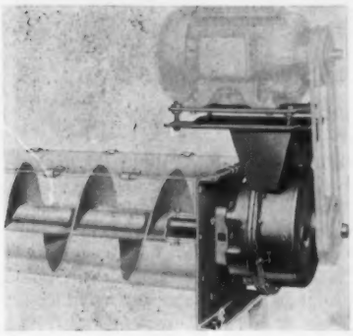
EXECUTIVE OFFICES: 1956 WEBSTER, OAKLAND 12, CALIF. • PLANT: WESTEND, CALIF.

PULP & PAPER

New Equipment Section

Screw Conveyor Drive

. . . in Various Assemblies



Applications: Designed especially for screw conveyor installations.
Advantages: Various drive assemblies can be furnished from stock; the basic drive (reducer with drive shaft and seal housing) can be combined with standard trough end as well as with the new Falk motor mount. Drive shafts are removable and on many applications can be removed without disturbing reducer or screw. Tapered roller bearings absorb thrust from the screw conveyor, thus eliminating need for thrust bearing on trough end.
Specifications: Drives are manufactured in six sizes, each with ratios of 4:1, 9:1, 14:1 and 24:1, thus assuring correct selections for all conveyors requiring ½ to 30 hp. Trough ends, available in eight sizes from 6 to 20 in., bolt to any standard trough.
Supplier: **Falk Corp., Dept. 255, Box 492, Milwaukee 1, Wis., U.S.A., Tel: DIvision 2-3131.**

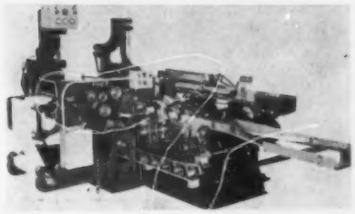
Pressure Vessels

. . . First Titanium-Clad

Applications: For pressure service (digesters, etc.) in pulp and paper and other processing industries.
Advantages: The first vessel produced, according to the manufacturer, has withstood many months of strenuous service for a United States petrochemical firm. The units are now in commercial-scale production and are said to provide titanium's corrosion resistance at considerably less cost than that of solid titanium structures.
Specifications: The vessel installed in the U.S. was designed for a working pressure of 150 psi at 500° F. It measures approximately 4 ft. in dia. by 12 ft. in height and was fabricated from plates of ½-in. mild steel clad with 5/64-in. and 7/64-in. A-40 titanium. Hemispherical heads, top and bottom, each were welded from pressed segments. Fittings and flanges were titanium-lined.
Supplier: **Chicago Bridge & Iron Co., 332 South Michigan Ave., Chicago 4, Ill., U.S.A., Tel: HArrison 7-6708; Horton Steel Works Ltd., Toronto, Ont., Canada.**

Toilet Roll Wrapper

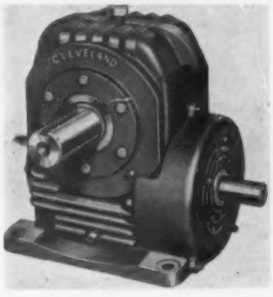
. . . for Continuous Operation



Applications: For wrapping loose, soft or firm rolls.
Advantages: The unit (Model 2758) has a shear-action roll breaker to separate infeeding rolls. Roll-fed labels with electric eye control may be used, controlled by an automatic brake. According to the manufacturer, parallel infeed and discharge makes possible single-operator roll inspection before and after wrapping.
Specifications: Speeds of up to 72 rolls per min. are possible in sizes ranging from 3½ to 5⅛ in. in dia.
Supplier: **Paper Converting Machine Co., Green Bay, Wis., U.S.A., Tel: HEmlock 7-7601; Leo Campagnano, Via Borromei 1 B/7, Milan, Italy.**

Speed Reducers

. . . Claim 80% More HP



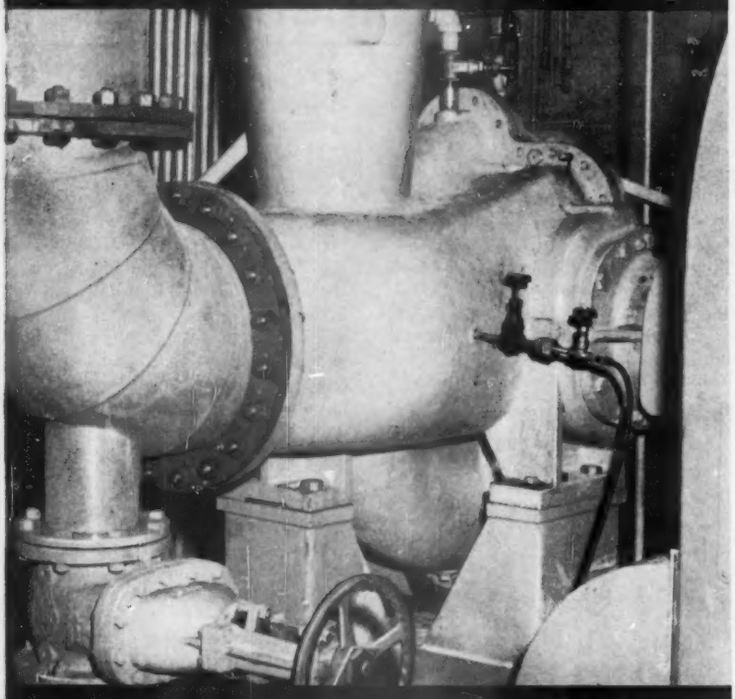
Applications: For power transmission applications in various industrial operations.
Advantages: This new line of reducers is said to be capable of transmitting as much as 80% more horsepower than carried by conventional worm gear units. The housing is of rugged one-piece cast iron design. The cooling fan is mounted on the input end of the worm shaft and is equally efficient in either direction of rotation. The worms are cut integral with the shaft and are ground to a high surface finish on both thread flanks. Gears have centrifugally-cast bronze rims with a high tin-nickel content, made integral with a cast iron center. Bearings are Timken taper roller type on both worm and gear shafts.
Specifications: Smaller sizes (1- to 40-hp) are in production. Larger sizes are now in various engineering stages.
Supplier: **Cleveland Worm & Gear Co., 3300 East 80th St., Cleveland 4, Ohio, Tel: VU 3-4560.**

Chemical Pump

. . . Made of Polyethylene

Applications: For safer acid dispensing from polyethylene carboys and chemical dispensing from drums.
Advantages: Made of corrosion-proof polyethylene, the unit is said to be virtually unbreakable. It handles oils, paints, acids, caustics, solvents and other chemicals. The pump, once installed, seals the container and has an angle discharge spout that may be turned upward to eliminate dripping. The Trylon chemical pump is sealed from outside contamination when not in use.
Specifications: Capacity is 0-10 gpm. The pump is furnished with a 2-in. drum-bung adapter.
Supplier: **Trylon Chemicals Inc., Lock Haven, Pa.**

Another WARREN Fan Pump



. . . . . an unusual installation

One of the two WARREN type 18-DB-32 double suction dual volute fan pumps installed at St. Regis Paper Co., Bucksport, Maine . . . an unusual fan pump installation. Notice the side mounting of this bottom suction unit. This specially engineered mounting helped cut piping costs and saved valuable floor space for St. Regis. And because the pump cover can be moved off oversize dowel pins in a horizontal plane, rather than lifted off, the side mounting offers especially good accessibility for a pump of this size. Many such special arrangements are available from Warren.

Here are some of the companies that are using Warren Fan Pumps

DIERKS PAPER CO.
Pine Bluff, Ark.
24-DB-22 —16,000 GPM at 30 ft. head

FIBREBOARD PAPER PRODUCTS CORP.
Antioch, Calif.
(6) 20-DB-22 —13,000 GPM at 39 ft. head

GULF STATES PAPER CORP.
Demopolis, Ala.
16-DB-20 —10,000 GPM at 155 ft. head

HUDSON PULP & PAPER CORP.
Palatka, Fla.
20-DL-22 —12,500 GPM at 80 ft. head

ST. REGIS PAPER CO.
Bucksport, Me.
(2) 18-DB-32 —12,500 GPM at 200 ft head

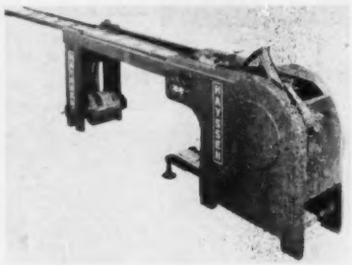
WARREN

CENTRIFUGAL · SCREW · RECIPROCATING · GEAR

WARREN PUMPS, INC. WARREN, MASSACHUSETTS

PP-44

Packaging Machine
. . . for Non-Uniform Products



Applications: For automatic packaging of non-uniform products and goods that are normally hand-wrapped or machine-wrapped with support.
Advantages: A unique method of forming the package, according to the manufacturer, is independent of the item being wrapped and permits use of the equipment for products of various sizes. Any heat-sealing material may be used.
Specifications: Electric eye length registration can be used with a printed target on the wrapping material or on the product itself, thus giving the operator the advantage of using the same machine for products of various size. Two types of heat-sealing heads are available. Resistance type heaters are used for regular heat-sealing material, while an impulse sealing method is used for unsupported polyethylene and other plastic material. Width adjustment is made by changing the width of the roll material.
Supplier: **Hayssen Mfg. Co., 1307 St. Clair Ave., Sheboygan, Wis.**

Plastic Pipe
. . . in New Large Sizes

Applications: For severe process conditions.
Advantages: The new polyvinyl chloride (PVC) plastic piping comes in two types: Type I—a pure PVC with excellent corrosion resistance and working properties particularly suited for severely corrosive process services; Type II—a similar product containing a modifier to give it high impact resistance in mechanically punishing as well as corrosive applications.
Specifications: New dias. now available are 8-, 10- and 12-in. With the addition of these sizes, the manufacturer now markets a complete line of Types I and II in dia. sizes of ¼- to 12-in. Four thicknesses are available—Schedules A, 40, 80 and 120.
Supplier: **A. M. Byers Co., Clark Bldg., Pittsburgh 22, Pa., Tel: ATlantic 1-8110.**

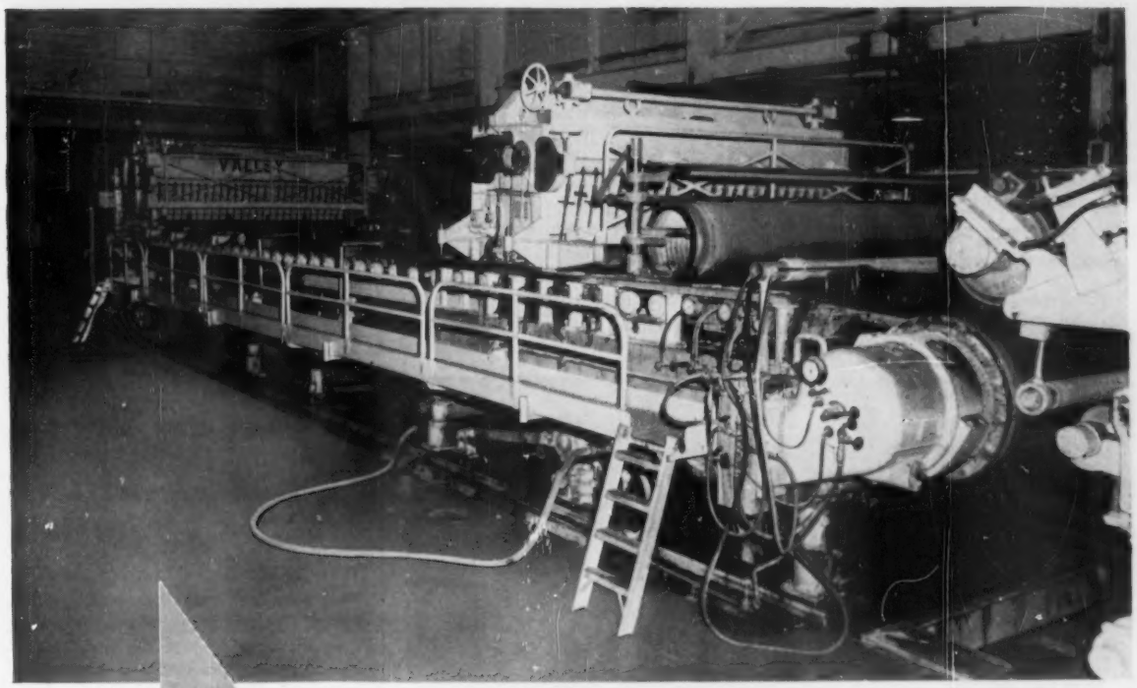
Another PRIMARY AND SECONDARY HEADBOX

by . . . VALLEY . . . *installed on the new 164" paper machine at . . .*

CASCADE KRAFT CORP.

Wallula, Washington

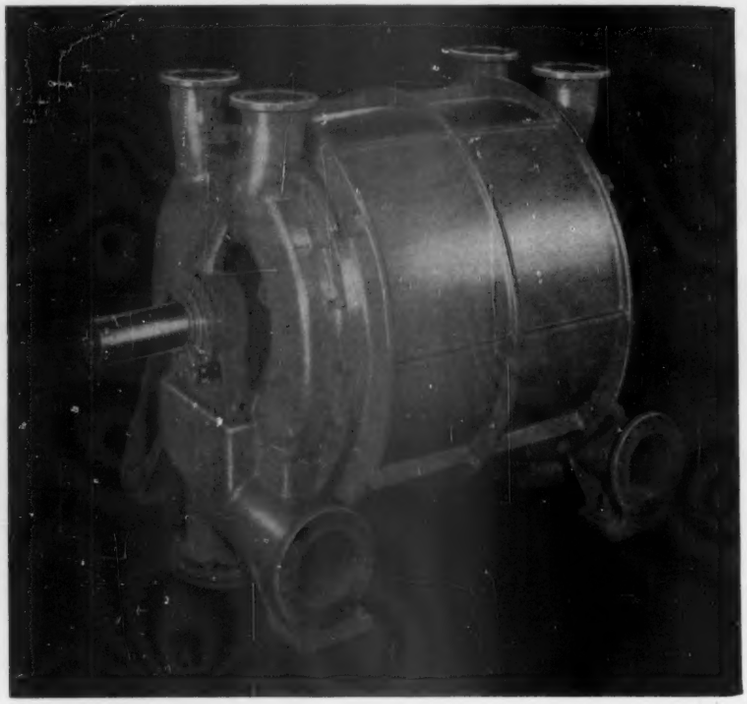
"We are more than pleased with the boxes which you furnished us."
Hugo Trygg,
Mill Manager



Consult . . .

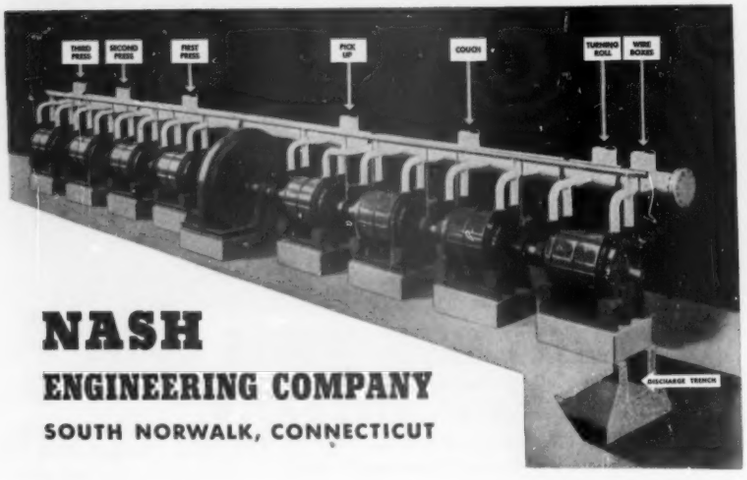
VALLEY IRON WORKS CORP.
subsidiary of Allis-Chalmers Manufacturing Co.
APPLETON, WISCONSIN
Canadian Representative: Pulp and Paper Mill Accessories Ltd.,
P. O. Box 850, Station "O", Montreal 9, Quebec

This New Nash Vacuum Pump Offers Four Separate Suctions and Vacuums Simultaneously



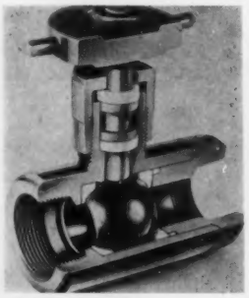
The Nash 5308-A has four separate suction inlets, each of which functions independently of the others. This offers the machine operator great flexibility, since these may be used in any desired combination to produce a variety of capacities and vacuums.

Picture below shows simple drive possible and flexibility of piping permitting capacities to exactly fit requirements of different sections of the paper machine.



NASH
ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT

Rigid Vinyl Ball Valve
. . . Answers Corrosion Problems



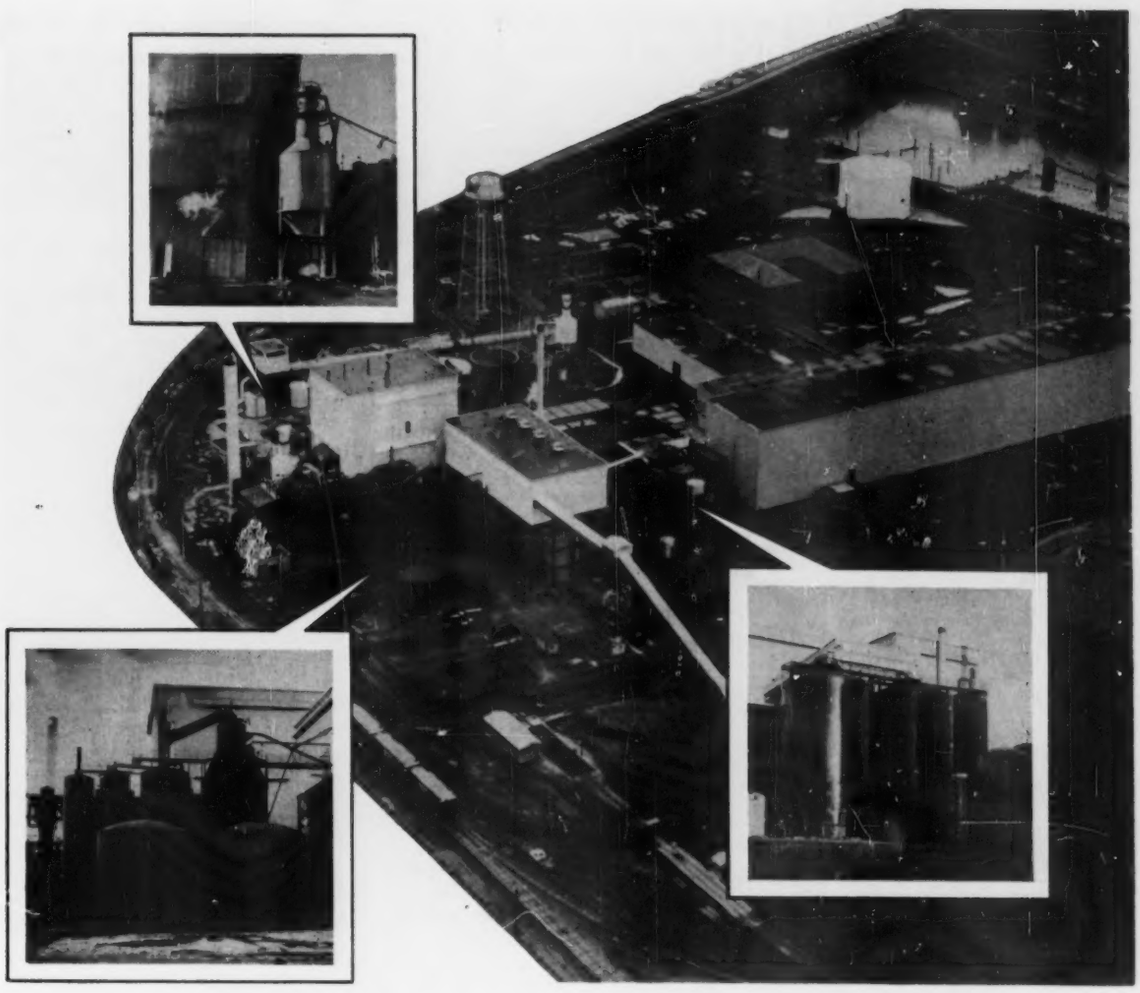
Applications: For piping systems where corrosion is a problem.
Advantages: Except for seats and seals, the valve is made of Geon, a vinyl supplied by B. F. Goodrich Chemical Co. It is said to offer superior resistance to oils, acids, alkalies and most chemicals. There is no problem of galling or seizure, and no lubrication is nedeed. Shipping weights are lower and installation easier.
Specifications: Available with threaded ends, weld ends or flanges, the vinyl valves are self-compensating for changes in pressure or temperature.
Supplier: **B. F. Goodrich Chemical Co., attn. G. B. Koch, 3135 Euclid Ave., Cleveland 15, Ohio, Tel: UTah 1-8200; and Jamesbury Corp., 62 Millbrook Rd., Worcester, Mass., Tel: SWift 9-4167.**

Filter Plant Instrumentation
. . . Automatic Operation, Control

Applications: For automatic operation and control of filter plants.
Advantages: The instruments include integrated components for opening, closing and modulating valve, regulating chemical feed rates and indicating and recording flow rates, levels and pressures.
Specifications: The new C.-A.-P. System instruments are available for operation on 3- to 15-psi output pressures.
Supplier: **Infilco Inc., 2750 South 12th St., P.O. Box 5033, Tucson, Ariz.**

Tips on Ultrasonic Cleaning

Alkaline and acidic detergents are frequently better for ultrasonic cleaning than the more viscous solvents. This is one of the six practical tips given in a new service bulletine published by Oakite Products, Inc., pioneer manufacturers of specialized chemical compounds for industrial cleaning and metal treating. Copies of Service Bulletin No. 16A are available from Oakite Products, Inc., 158C Rector St., New York 6, N.Y.



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in the huge Georgia-Pacific Mill

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"Prior to using LUBRIPLATE, we were replacing shaker screen bearings within 60 to 120 days due to lack of or faulty lubrication. Since we started using LUBRIPLATE seven years ago, we have only replaced two shaker screen bearings and these because of natural wear. We now use LUBRIPLATE for general lubrication throughout our plant."

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Allis-Chalmers Plant Tour for Lake States TAPPI

Production facilities of the vast West Allis, Wis. works of Allis-Chalmers Mfg. Co. were given close scrutiny during the October 6 meeting of Lake States TAPPI. Allis-Chalmers hosted the gathering, which included an extensive tour of the plant. One of the principal points of interest was the 1,600-ft. erection room for electric and steam turbines.

Prior to the tour, the TAPPI group was "briefed" in the assembly hall of the new West Office Building. Greetings were extended by C. S. Schweers, vice pres. and director of sales for A-C's Industries Group. His talk was followed by colored slides of the outstanding features of the sprawling plant.

At the conclusion of the visit, Allis-Chalmers was host at a social hour and buffet dinner at the Milwaukee Athletic Club. Principal speaker was K. W. Haagensen, director of the Public Relations div.

New Firm Distributes Anti-Corrosion Materials

Corrosion-resistant products will be distributed in the upper Midwest by a recently organized company: Eastforth Corp., P.O. Box 30, 108 N. Spruce Ave., Marshfield, Wis.

The firm stocks stainless steel sheets in all gauges; stainless plates, angles, pipe, fittings, etc.; Carpenter 20CB titanium; Hastelloys, and resin-bonded fiberglass. Material is supplied by Arcos Corp.; Tube Turns, duVerre Inc.; Westinghouse Electric Corp.; Carpenter Steel Co., and Titanium Metals Corp.

A New Pulp By-Product: Bacon-Flavored Yeast

Bakon Yeast Inc., New York City, and Lake States Yeast & Chemical Division, St. Regis Paper Co., Rhinelander, Wis., have entered a long term agreement under which a new yeast by-product of the Rhinelander sulfite mill will be manufactured.

Lake States will manufacture Bakon smoked yeast, a vitamin-rich seasoning ingredient for foods of all kinds, which adds a hickory smoked bacon flavor. A new "Smoke House," actually a well-engineered and modern Bakon Yeast manufacturing plant has been built at Pelican, Wis., just south of Rhinelander. The main yeast plant continues to operate at Rhinelander. Jesse Holderby is manager of Lake States Yeast & Chemical Division and William Moggio is production manager.

Soda Base Recovery Tentatively Planned For Rayonier Mill

Tentative plans to install a soda base recovery system in Rayonier's Grays Harbor mill in Hoquiam, Wash., were disclosed in a recent application submitted by Rayonier to the Washington State Pollution Control Commission.

The application reveals that the proposed soda base process will reclaim 85% of the waste material currently discharged into the Grays Harbor estuary. The huge Rennie Island impounding basin will continue to be used to store and selectively control the discharge of the remaining waste material which cannot be reclaimed.

The new soda base recovery system will be designed for a capacity of 500 tons of pulp per day, which will provide sufficient pulp production for the possible future installation of a second paper machine.

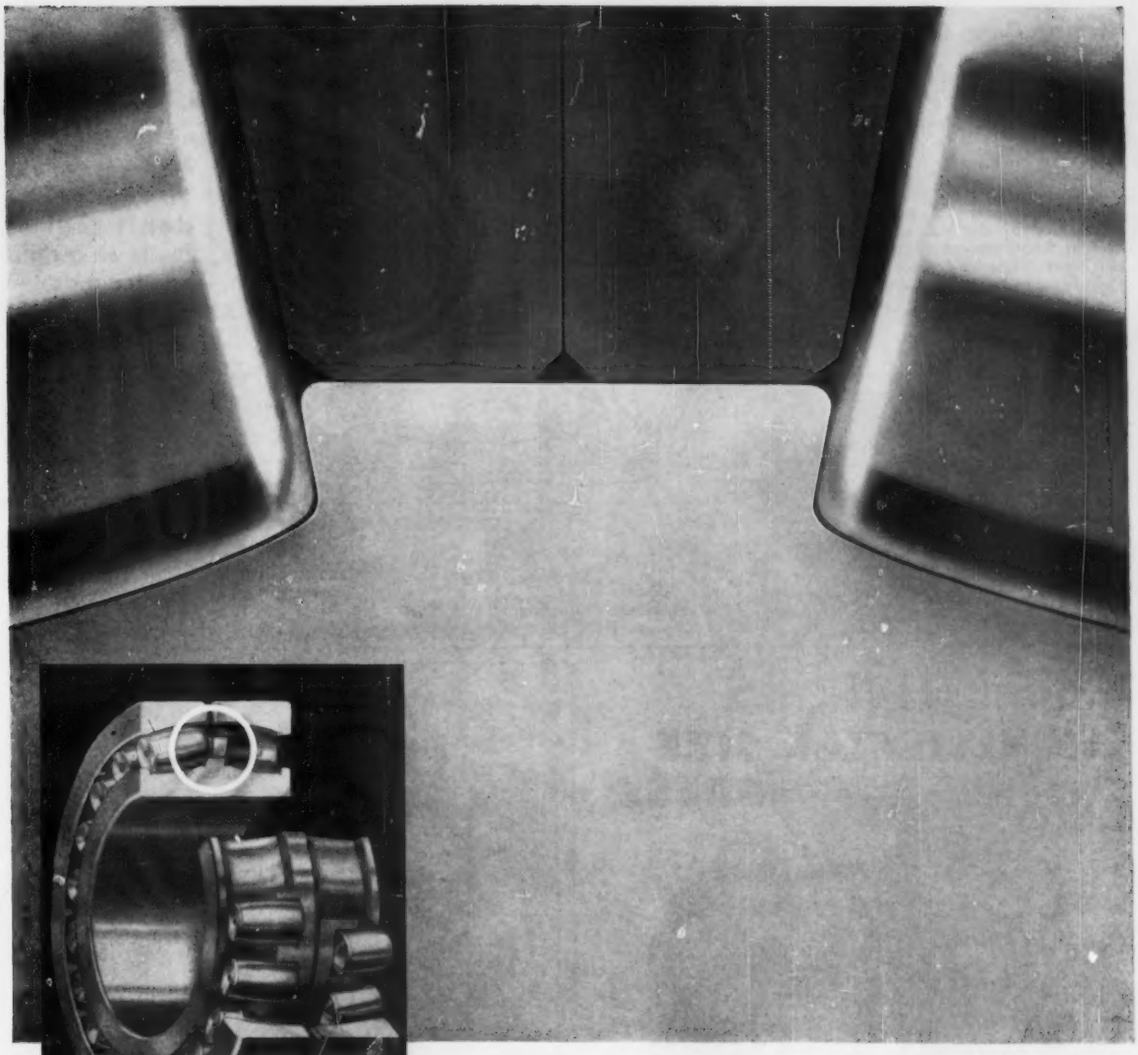
George A. Holt, the company's Grays Harbor manager, said the plans were submitted to the commission with the request for a permanent disposal permit. Once the permit is issued, he said, the plan will be submitted to the company's board of directors in the New York office for approval. The plans for the waste recovery program follow on the heels of extensive research on behalf of the Rayonier laboratories.

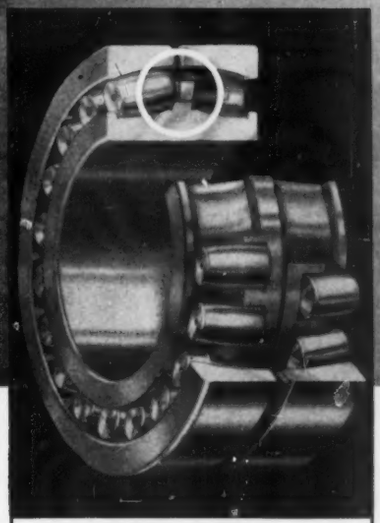
Sandy Hill Kamyr System Bleaches Bowaters Pulp

PULP & PAPER's very comprehensive, well illustrated report on the new Bowaters Southern Corp. mill at Catawba, S.C., in November detailed information on virtually everything of importance in the mill but neglected to mention that the 3-stage bleach plant was a Sandy Hill Kamyr system. Furthermore, our report erred in saying bleach washers were by another company. The three vacuum washers in the bleach plant were Kamyr design by Sandy Hill. So was the bleach tower equipment. And also the feltless presses in the wet machine.

Swinerton & Walberg's 70th

Swinerton & Walberg Co., San Francisco, recently celebrated its 70th anniversary as the oldest major building construction group in the west. Last year it had more than 8,800 employes with payrolls exceeding $12¾ million. The Swinerton group (which includes Engineers Limited Mechanical Construction Co.) reports doing a major portion of paper mill work in California and is also active in the Pacific Northwest.





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Spherical Roller Bearings Offer:

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- integral center guide flange for stability
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The integral center guide flange of the *Torrington* Spherical Roller Bearing provides *positive* roller guidance—the one best way to insure operating stability under radial and thrust loads.

Center guide flange surfaces and roller ends are ground to a common spherical radius. The asymmetrical roller seeks this flange under load, bearing lightly but constantly against it. Roller wobble and skewing are eliminated, and stress concentrations leading to early failure are avoided. Bearing operation is cooler, quieter and smoother.

The integral guide flange is adapted from the same principle used in the design of Torrington Tapered Roller Bearings. It is an engineering refinement, based on experience in all types of applications, that insures outstanding performance in your equipment. **The Torrington Company, South Bend 21, Ind.—and Torrington, Conn.**

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Meeting Dates Calendar

December 1
Golden Gate District TAPPI (Financial Aspects of the Pulp & Paper Industry)
Sabella's Capri Room, San Francisco, Cal.

December 1-2
North American Pulp, Paper and Paperboard Industrial Waste Conference (sponsored by the National Council for Stream Improvement Inc., the Institute of Paper Chemistry and the Sulphite Fulp Manufacturers' Research League)
Edgewater Beach Hotel, Chicago, Ill.

December 3-5
Pacific Coast Division PIMA (Annual Fall Meeting)
Olympic Hotel, Seattle, Wash.

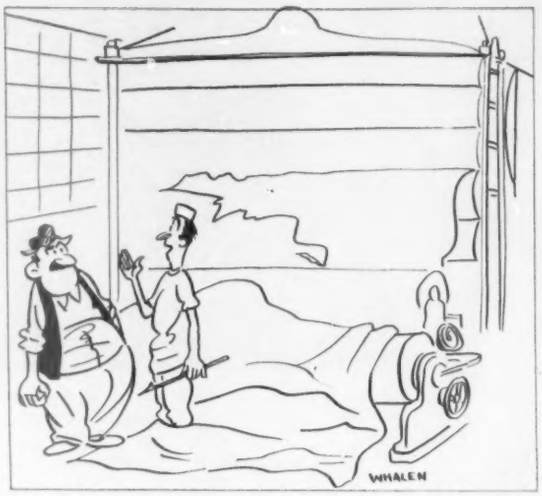
December 10
Ohio TAPPI (Mechanics of Retention)
Manchester Hotel, Middletown, Ohio

January 14
Connecticut Valley PIMA
Publick House, Sturbridge, Mass.

January 21
Kalamazoo Valley TAPPI-Michigan PIMA
Hotel Harris, Kalamazoo, Mich.

January 25-28
Plant Maintenance & Engineering Show
Convention Hall, Philadelphia, Pa.

January 26-29
Canadian Pulp & Paper Assn.
Montreal, Canada (Technical Sec. at Hotel Elizabeth)



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HORIZONTAL SIZE PRESS

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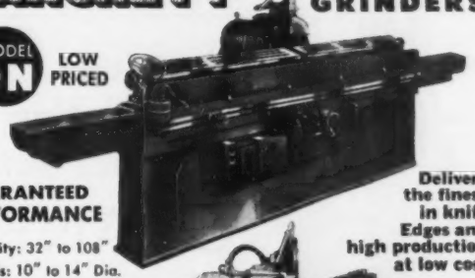
MODEL **DN** LOW PRICED



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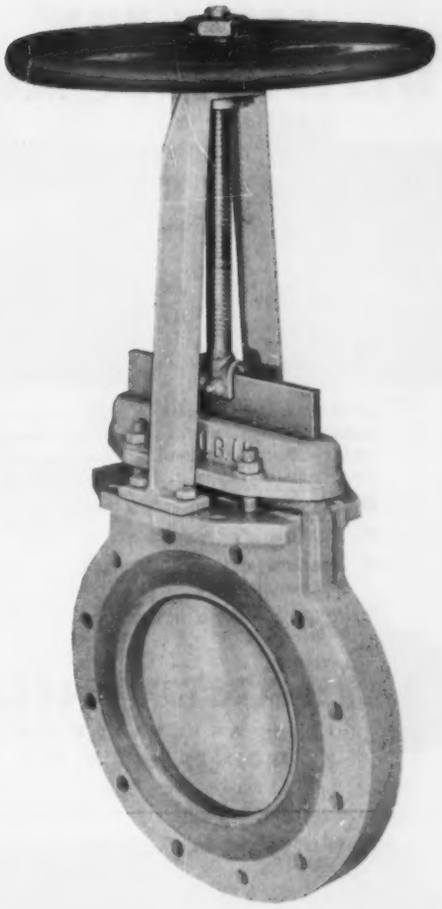

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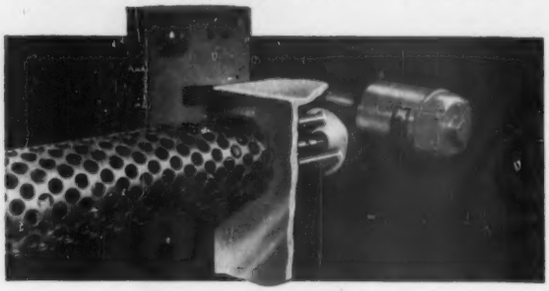

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- Direct connected motor
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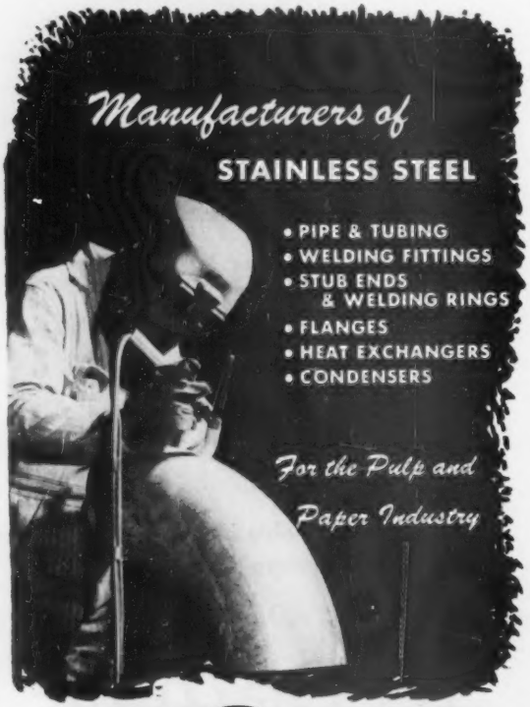

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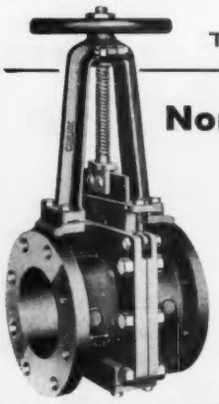

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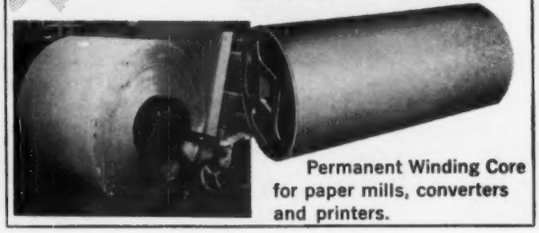
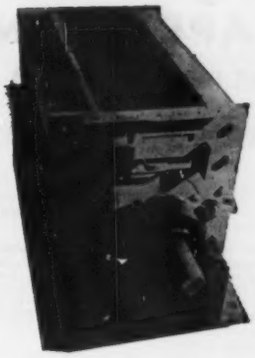


Permanent Winding Core for paper mills, converters and printers.



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Put one Butterworth Refill in the stack with any other roll. Carefully rate it under operating conditions. Check the finish it turns out. Time it to determine how many hours of service it gives without refilling or turning down. Results inevitably lead to standardizing on Butterworth Calender Rolls.

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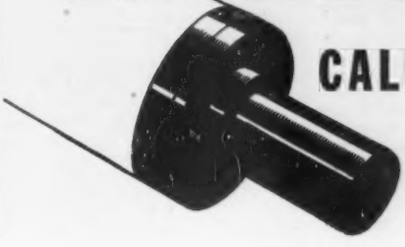

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WANTED

For 500 ton Kraft linerboard mill being built at Counce, Tennessee. Mill is located on Tennessee River just below Pickwick Dam, an area of pleasant living conditions with excellent recreational facilities. Mill is scheduled for operation January 1, 1961; however, we wish to fill the following positions immediately so that the men chosen can be in on the planning and installation stages.

POWER SUPERVISOR

Must be able to plan and organize Power Department; help select and train men; plan and direct efficient and safe operation of power and recovery boiler and related equipment. Will supervise combination gas and bark fired boiler and large recovery unit. Will report to Pulp Mill Superintendent. This position offers excellent opportunity for a competent power man to increase his knowledge of pulp mill operations, or to grow in the power plant field, as the mill expands.

INSTRUMENT SUPERVISOR

Must be able to plan and organize Instrument Department; help select and train men, supervise, plan and direct installation and maintenance activities of the department. Knowledge of current Kraft mill instrumentation is essential. Will report to Plant Engineer. This is an opportunity for a thoroughly experienced man to help select and install instrumentation and man a modern new mill.

Only well qualified men with Southern experience will be considered.

TENNESSEE RIVER
PULP & PAPER COMPANY
P. O. BOX 33
COUNCE, TENN.

WANTED
GENERAL PRODUCTION SUPT.
FOREIGN KRAFT PAPER MILL

We are anxious to contact a highly qualified, proficient, practical General Production Superintendent to supervise operation of and train native personnel to be mill operators and paper machine hands in a modern, new, kraft paper mill equipped with two high speed fourdrinier machines now producing a full range of both M/F and M/G kraft papers, paperboards and specialties.

University training and ability to speak Spanish would be helpful but would be secondary to a record of proven ability as a practical paper maker with ingenuity. Please submit complete resume, with recent snapshot, to Box P-192, PULP & PAPER, 370 Lexington Avenue, New York 17, N. Y.

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We have an immediate requirement for a graduate pulp and paper engineer with extensive design and consulting experience in the domestic pulp and paper field. Must be capable of initial contact with prospective client, complete facility design, estimating, and project engineer activities on large pulp and paper projects. This is an exceptional opportunity for a man with training and experience in the industry.

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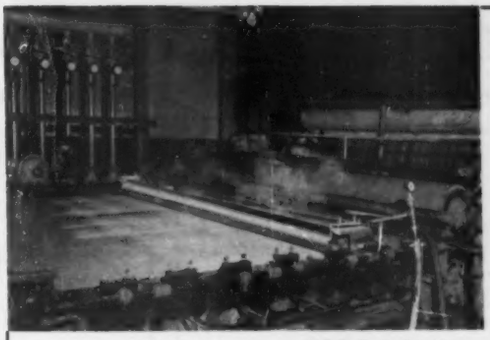

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The Last Word PULP & PAPER Editors' Page

The Battle for New Markets

"If the paper industry is to successfully meet the inevitable competition that will come from light metals and plastics developments as substitutes for paper and pulp products, there must be steady progress by the technical and engineering departments of our industry in bringing forward more modern methods, equipment and processes.

"We have the responsibility to see that our customers can continue to use paper products in large volume. To do this they must be able to buy our products at reasonable costs. We cannot expect that either wages or the cost of raw materials will go back to pre-war levels. So, we must look to you engineers for more efficiency in our mills."

This statement was made some 14 years ago by W. Irving Osborne Jr., then president of Cornell Wood Products Co. and National Paperboard Assn. He was talking to the first TAPPI Engineering Meeting, which was held in Milwaukee's Pfister Hotel, October, 1946. As appropriate as his advice was then, it is perhaps more so today.

Today, plagued on one hand by heavy capital investment costs, rising labor and raw material costs and diminishing profits, the industry is also attacked by growing competition from newer materials that have displaced the "indispensable" paper in some applications, and threaten it in others. The battle for new markets is waged not only by paper but also by plastics and aluminum.

Since 1946, the industry's engineers have tackled these problems referred to by Mr. Osborne, and have come up with wider and faster paper machines, faster cooking processes, efficient quality control techniques and instruments. Since 1946, the productive capacity of the industry to produce paper and paperboard has almost doubled. Not only has the industry speeded up the pulp and papermaking processes but it has also increased the quality of its output.

As much as has been done, pulp and paper engineers face far more serious problems in the next decade. As science steps up the pace of its progress to the point where what is modern today is obsolete tomorrow, the industry must forever evaluate new techniques, processes and equipment. Electronics, atomic energy, instrumentation and automation are all new factors to deal with. How much can the industry take advantage of these new tools. How far can you go in automating paper mills?

1959—A Year of Records

We are saying goodbye this month to the best year in the history of the paper and paperboard industry. There were times, earlier this year, when you might have doubted that 1959 was going to be such a wonderful year.

Output of about 34,000,000 tons by U.S.A. mills should top the old 1956 record by 8% and last year's mark by some 10%.

And despite the steel strike, things are looking good and sharp for 1960. We can say right now that all signs point to another record year in 1960.

Some paper prices have been increased and the average may climb slightly as companies seek relief from the rising costs and still tight profit margins, still only about 10% despite record sales.

In 1960, this industry can look for even sharper competition from other materials such as plastics, and there will be new ones, and aluminum, etc. But the mills right now are running at record levels and this will make for a Merry Christmas for all. The most progressive companies are emphasizing research in marketing and in products, and if this continues, they should cope successfully with non-paper competitors.

Paper sales will probably top $12,000,000,000 this year —thus setting a new all-time high, part of which is due to inflation. Sales will surpass the 1958 record by 12 or 13%.

All in all, 1959 will go in the books as a very good year for paper and paperboard. There is still too much pulp capacity, but there is more business for the pulp industry, so that is an improvement, too.

Wilson — Darmstadt — Johnson

Editor Talks on Europe

Here are scenes at another of a series of talks which Editor Albert W. Wilson of PULP & PAPER and PULP & PAPER INTERNATIONAL has been making on his recent three months tours of 13 countries in Europe, including Soviet Russia. His visit to a Russian paper mill and talks with top Russian officials for the Soviet pulp and paper industry were highlights of the talk.

On this occasion he was speaking to engineers and research men of the Boiler Division, Babcock & Wilcox Co., Barberton, O., at the invitation of William J. Darmstadt, B&W's specialist for pulp and paper industry sales and service. Ken A. Johnson and Maury Castagne, of this magazine's staff, were also present and Mr. Castagne took the pictures.

Mr. Wilson has made the talk to two pulp and paper industry groups in Chicago, three on the West Coast and is scheduled to address pulp and paper group meetings in Michigan and Wisconsin. On Nov. 9, he was luncheon speaker at a "full house" meeting of the Western Division of the Salesmen's Association of the Pulp and Paper Industry in the Sherman Hotel, Chicago.

A Need for Paper

One of the Veterans Administration's topmost nurses (a personal friend of ours) points out the critical need for disposable flameproof paper bags for bedside use in hospitals. Here's a continuous ready-made market for specialty bags which do not support combustion but will still be consumed by the high heat of incineration.

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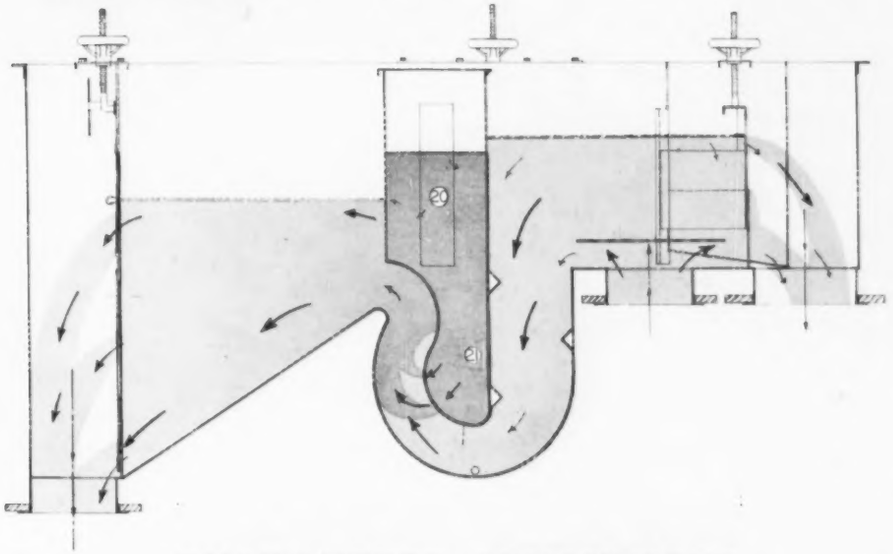

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